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Introductory Chapter

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

As we stated in our first book, Calculating Basic Statistical Procedures in SPSS: A Self-Help and Practical Guide to Preparing Theses, Dissertations, and Manuscripts, we have observed student after student who experienced difficulty with using the Statistical Package for the Social Sciences (SPSS) and with interpreting the voluminous output generated by SPSS. These difficulties were present for basic statistical procedures and even more noticeable for more advanced statistical analyses. The problems students experienced in conducting these procedures, along with statistics anxiety they experienced, led the two of us to develop very specific and very detailed steps for students to follow. Even with the use of these steps, we still had students who managed to experience difficulty in being able to use SPSS successfully. As a result, we generated screenshots for every major point-and-click step. This combination of steps and screenshots has met with excellent student satisfaction and, most importantly for us as instructors, has enhanced their ability to be successful in using SPSS.

We have written this textbook to be a complement to the basic statistics text mentioned above. We believe that using our detailed steps and screenshots will assist readers in conducting the more complicated analyses discussed in this text. Graduate students, especially doctoral students, who take an advanced statistics course in which SPSS is used will find these steps and screenshots to be very practical and very easy to follow. Finally, faculty members who engage in scholarly activities but are years removed from their own statistics courses will find this textbook to be helpful. We hope that you find our materials helpful to you in your use of SPSS and in your interpretation of SPSS output.

- John R. Slate, Professor, Sam Houston State University
- Ana Rojas-LeBouef, Assistant Professor, Sam Houston State University

Selecting a Single Group for Statistical Analysis

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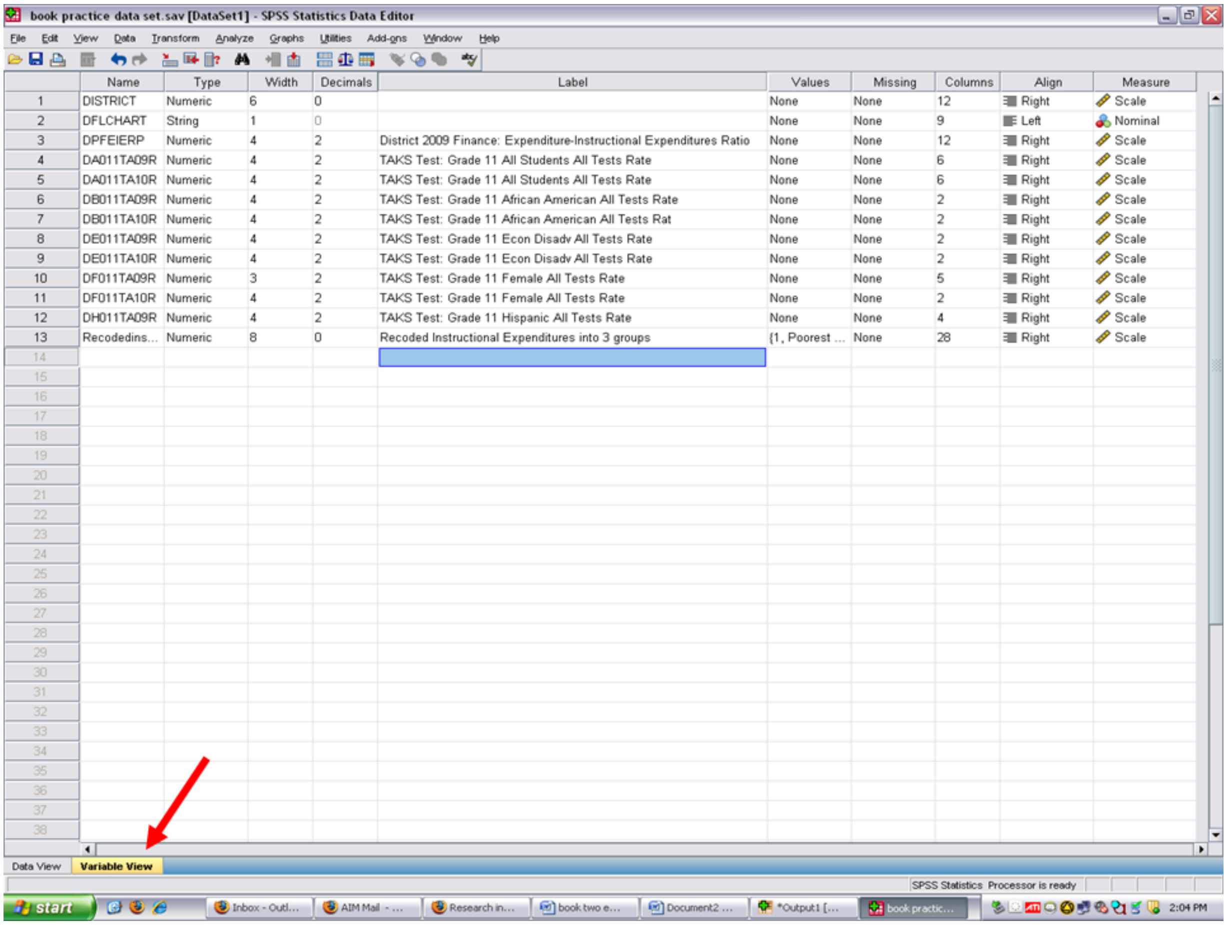
- **Brad E. Bizzell**, is a recent graduate of the Virginia Tech Doctoral Program in Educational Leadership and Policy Studies, and is a School Improvement Coordinator for the Virginia Tech Training and Technical Assistance Center. In addition, Dr. Bizzell serves as an Assistant Editor of the NCPEA Connexions Project in charge of technical formatting and design.
- **Janet Tareilo**, is a Professor at Stephen F. Austin State University and serves as the Assistant Director of NCPEA Publications. Dr. Tareilo also serves as an Assistant Editor of the NCPEA Connexions Project and as a editor and reviewer for several national and international journals in educational leadership.

In this chapter, we will provide you with the steps and screenshots to select out a single group for analysis. In this circumstance, your data set consists of data from multiple groups. Your interest, however, is in obtaining statistics on only one specific group. Using SPSS for all students will only provide you with statistical information for all of the individuals, aggregated across all of the groups. It will not give you statistical information on a specific group. If you follow the steps and screenshots we provide, you can have SPSS generate statistics for the group of students in which you are interested.

This step presupposes that you have already opened up SPSS and your data file. Click on Variable View in the data window.



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4	DA011TA09R	Numeric	4	2	TAKS Test: Grade 11 All Students All Tests Rate	None	None	6	Right	Scale
5	DA011TA10R	Numeric	4	2	TAKS Test: Grade 11 All Students All Tests Rate	None	None	6	Right	Scale
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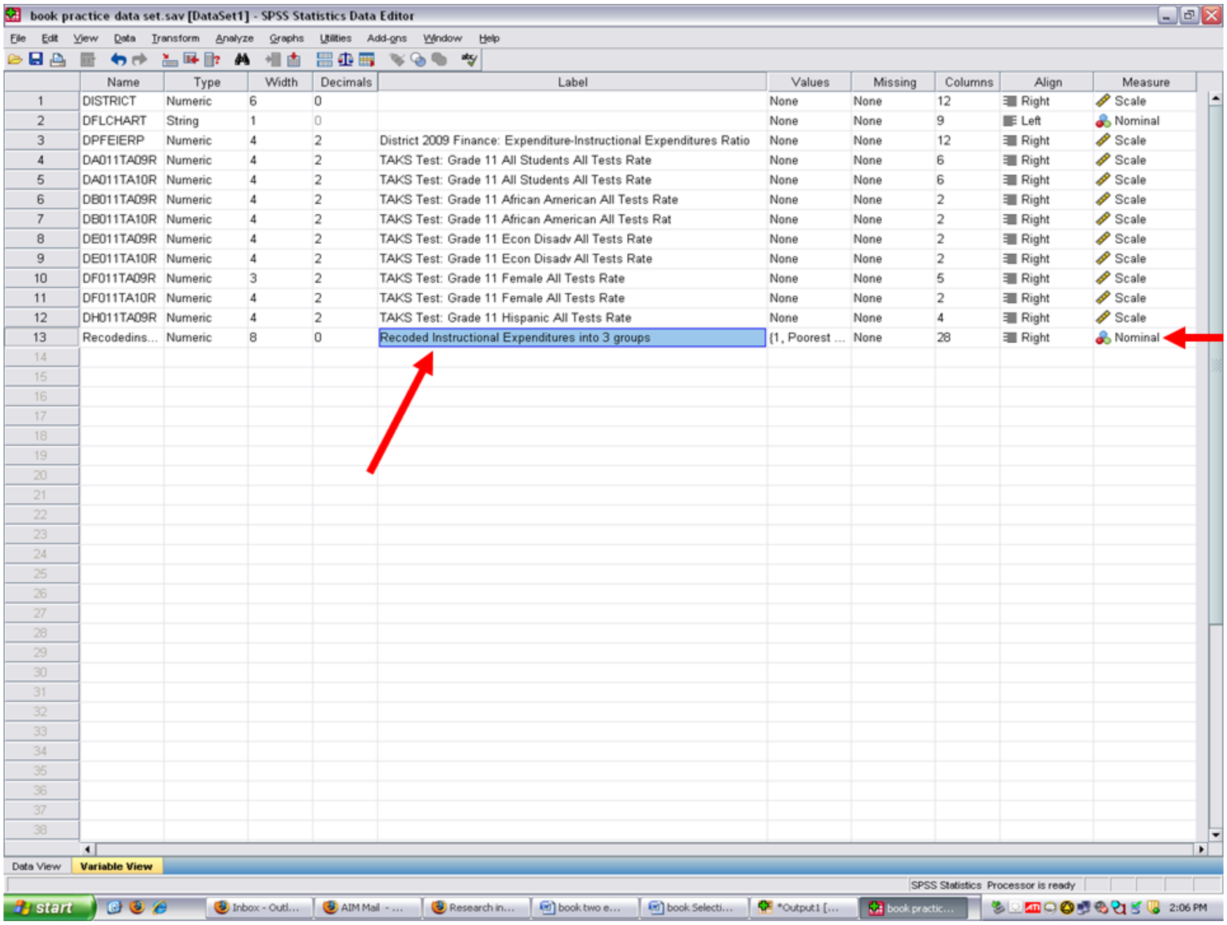
8	DE011TA09R	Numeric	4	2	TAKS Test: Grade 11 Econ Disadv All Tests Rate	None	None	2	Right	Scale
9	DE011TA10R	Numeric	4	2	TAKS Test: Grade 11 Econ Disadv All Tests Rate	None	None	2	Right	Scale
10	DF011TA09R	Numeric	3	2	TAKS Test: Grade 11 Female All Tests Rate	None	None	5	Right	Scale
11	DF011TA10R	Numeric	4	2	TAKS Test: Grade 11 Female All Tests Rate	None	None	2	Right	Scale
12	DH011TA09R	Numeric	4	2	TAKS Test: Grade 11 Hispanic All Tests Rate	None	None	4	Right	Scale
13	Recodedins...	Numeric	8	0	Recoded Instructional Expenditures into 3 groups	{1, Poorest ...	None	28	Right	Scale

Identify your grouping variable. It should be a nominal measure (see the far right column). In the example below, Recoded Instructional Expenditures into 3 groups, is our grouping variable.

Click on the Values cell for this grouping variable. Three dots will appear. These three dots indicate that a screen is hidden underneath this cell.



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2	DFLCHART	String	1	0		None	None	9	Left	Nominal
3	DPFEIERP	Numeric	4	2	District 2009 Finance: Expenditure-Instructional Expenditures Ratio	None	None	12	Right	Scale
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5	DA011TA10R	Numeric	4	2	TAKS Test: Grade 11 All Students All Tests Rate	None	None	6	Right	Scale
6	DB011TA09R	Numeric	4	2	TAKS Test: Grade 11 African American All Tests Rate	None	None	2	Right	Scale
7	DB011TA10R	Numeric	4	2	TAKS Test: Grade 11 African American All Tests Rat	None	None	2	Right	Scale
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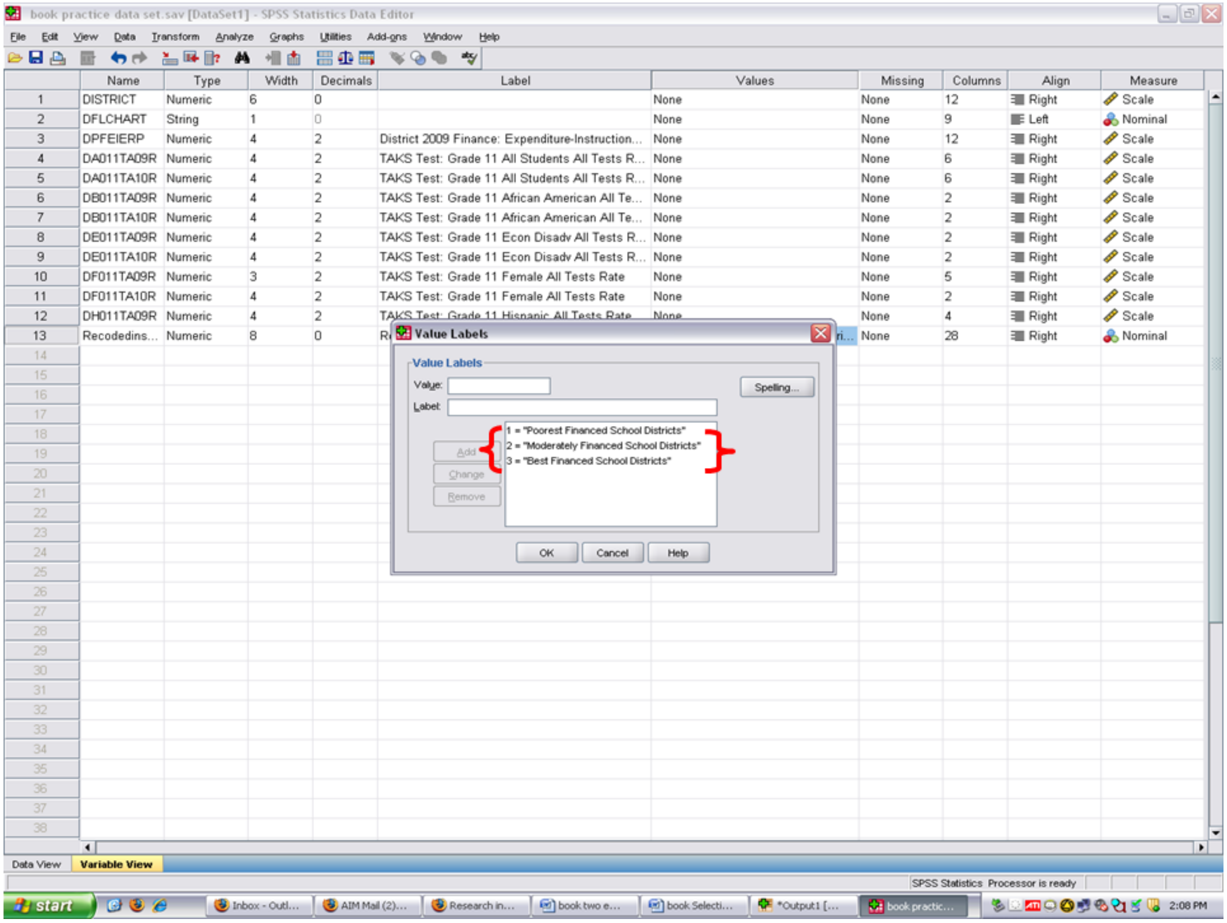
10	DF011TA09R	Numeric	3	2	TAKS Test: Grade 11 Female All Tests Rate	None	None	5	Right	Scale
11	DF011TA10R	Numeric	4	2	TAKS Test: Grade 11 Female All Tests Rate	None	None	2	Right	Scale
12	DH011TA09R	Numeric	4	2	TAKS Test: Grade 11 Hispanic All Tests Rate	None	None	4	Right	Scale
13	Recodedins...	Numeric	8	0	Recoded Instructional Expenditures into 3 groups	{1, Poorest ...	None	28	Right	Nominal

Clicking on the three dots will reveal the hidden screen. After clicking on the three dots, this screen appears and shows us the names of the three groups.



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2	DFLCHART	String	1	0		None	None	9	Left	Nominal
3	DPFEIERP	Numeric	4	2	District 2009 Finance: Expenditure-Instruction...	None	None	12	Right	Scale
4	DA011TA09R	Numeric	4	2	TAKS Test: Grade 11 All Students All Tests R...	None	None	6	Right	Scale
5	DA011TA10R	Numeric	4	2	TAKS Test: Grade 11 All Students All Tests R...	None	None	6	Right	Scale
6	DB011TA09R	Numeric	4	2	TAKS Test: Grade 11 African American All Te...	None	None	2	Right	Scale
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12	DH011TA09R	Numeric	4	2	TAKS Test: Grade 11 Hispanic All Tests Rate	None	None	4	Right	Scale
13	Recodedins...	Numeric	8	0	R	ri...	None	28	Right	Nominal

Value Labels

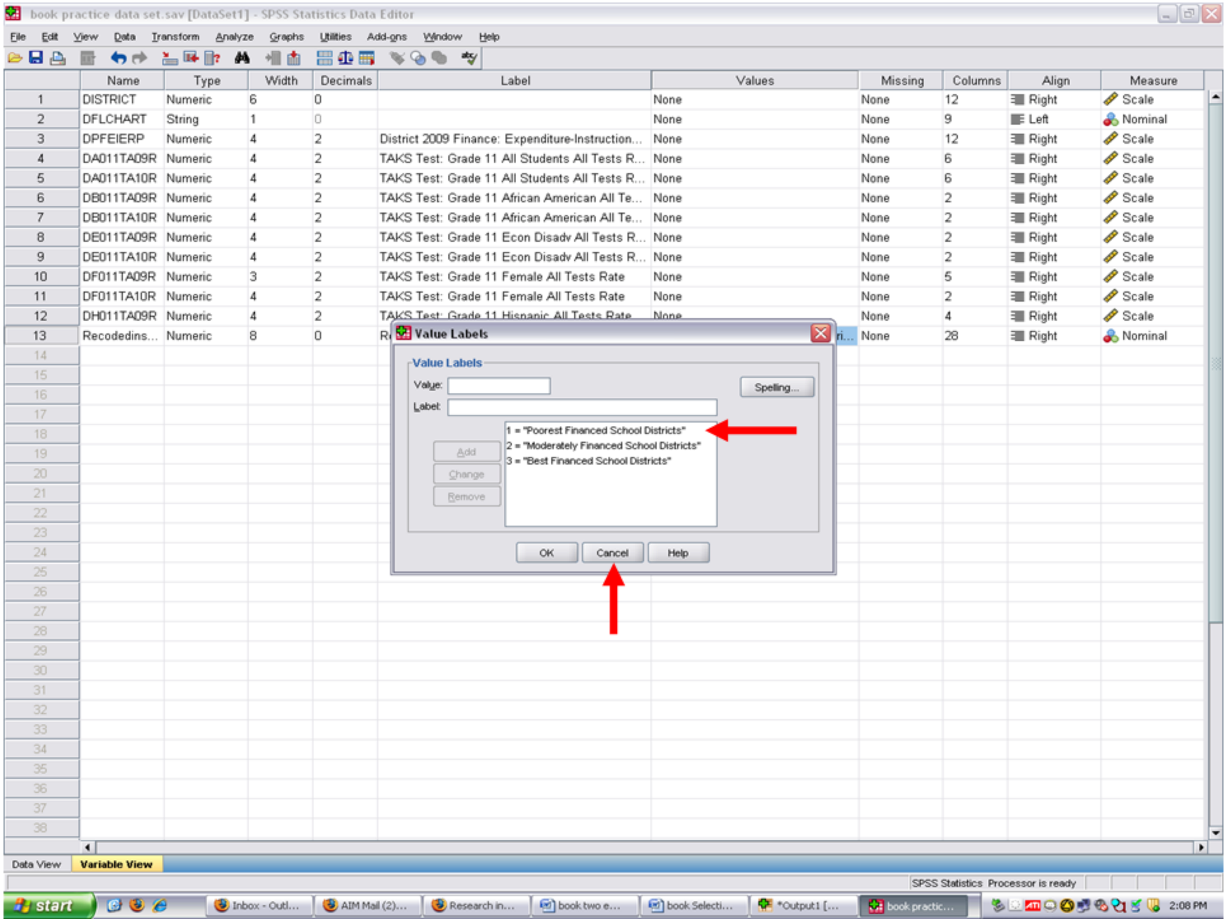
Value Labels

Value:

Label:

1 = "Poorest Financed School Districts"
2 = "Moderately Financed School Districts"
3 = "Best Financed School Districts"

For purposes of this chapter, we will have statistics calculated for group 1 which is the Poorest Financed School Districts. Now that we know that this group is numbered as group 1, we will cancel out of this screen.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File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
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12	DH011TA09R	Numeric	4	2	TAKS Test: Grade 11 Hispanic All Tests Rate	None	None	4	Right	Scale
13	Recodedins...	Numeric	8	0	R	ri...	None	28	Right	Nominal

Value Labels

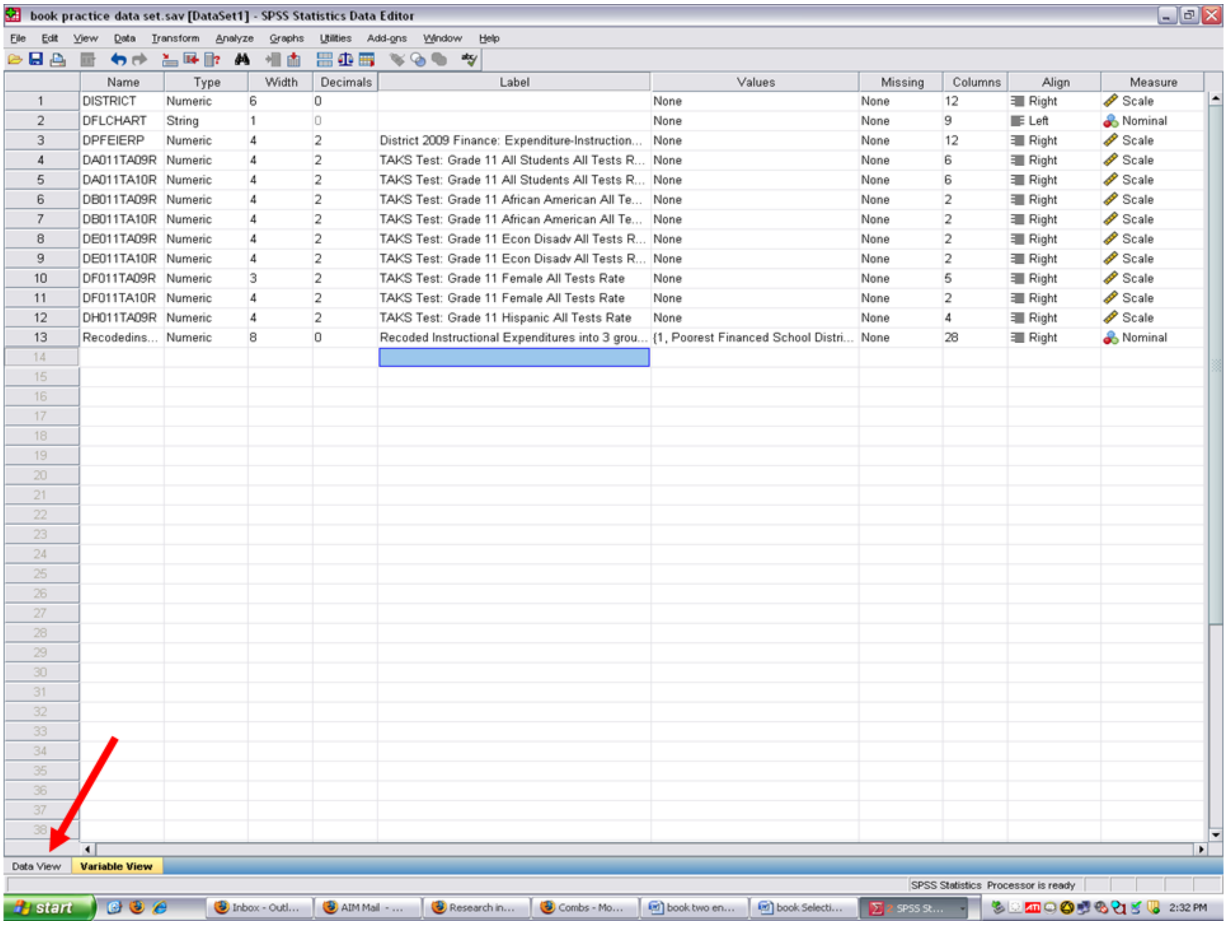
Value Labels

Value:

Label:

1 = "Poorest Financed School Districts"
2 = "Moderately Financed School Districts"
3 = "Best Financed School Districts"

Click on the data view screen.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
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start
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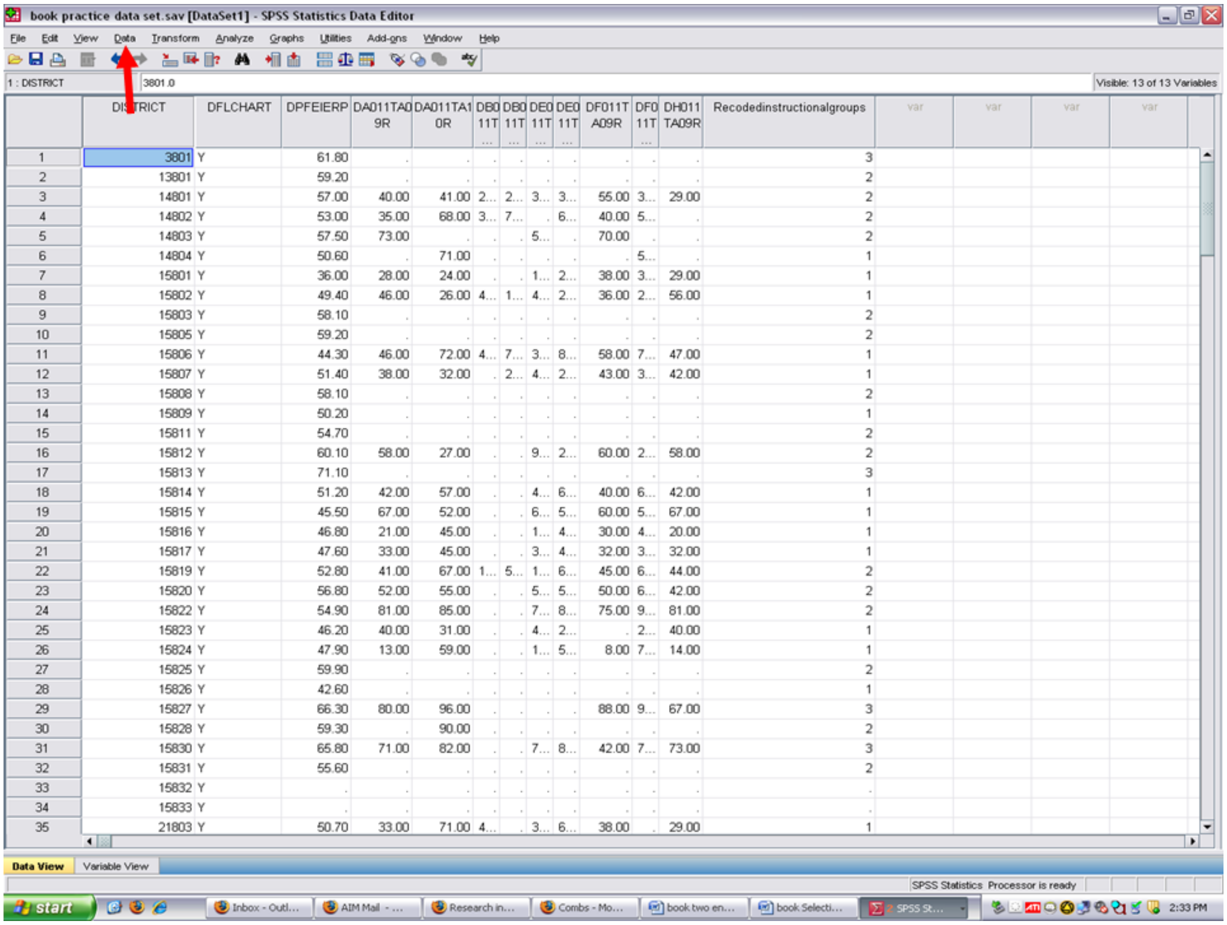
13	Recodedins...	Numeric	8	0	Recoded Instructional Expenditures into 3 grou...	{1, Poorest Financed School Distri...	None	28	Right	Nominal

We are now at the data screen. To select out a specific group on which to have statistics calculated, click on Data.

√ Data


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
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SPSS Statistics Processor is ready
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AIM Mail - …
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Combs - Mo…
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SPSS St…
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1 : DISTRICT 3801.0

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2	13801	Y	59.20	.	.	.	.	.	.	.	.	.	2				
3	14801	Y	57.00	40.00	41.00	2…	2…	3…	3…	55.00	3…	29.00	2				
4	14802	Y	53.00	35.00	68.00	3…	7…	.	6…	40.00	5…	.	2				
5	14803	Y	57.50	73.00	.	.	.	5…	.	70.00	.	.	2				
6	14804	Y	50.60	.	71.00	.	.	.	.	.	5…	.	1				
7	15801	Y	36.00	28.00	24.00	.	.	1…	2…	38.00	3…	29.00	1				
8	15802	Y	49.40	46.00	26.00	4…	1…	4…	2…	36.00	2…	56.00	1				
9	15803	Y	58.10	.	.	.	.	.	.	.	.	.	2				
10	15805	Y	59.20	.	.	.	.	.	.	.	.	.	2				
11	15806	Y	44.30	46.00	72.00	4…	7…	3…	8…	58.00	7…	47.00	1				
12	15807	Y	51.40	38.00	32.00	.	2…	4…	2…	43.00	3…	42.00	1				
13	15808	Y	58.10	.	.	.	.	.	.	.	.	.	2				
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1				
15	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2				
16	15812	Y	60.10	58.00	27.00	.	.	9…	2…	60.00	2…	58.00	2				
17	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3				
18	15814	Y	51.20	42.00	57.00	.	.	4…	6…	40.00	6…	42.00	1				
19	15815	Y	45.50	67.00	52.00	.	.	6…	5…	60.00	5…	67.00	1				
20	15816	Y	46.80	21.00	45.00	.	.	1…	4…	30.00	4…	20.00	1				
21	15817	Y	47.60	33.00	45.00	.	.	3…	4…	32.00	3…	32.00	1				
22	15819	Y	52.80	41.00	67.00	1…	5…	1…	6…	45.00	6…	44.00	2				
23	15820	Y	56.80	52.00	55.00	.	.	5…	5…	50.00	6…	42.00	2				
24	15822	Y	54.90	81.00	85.00	.	.	7…	8…	75.00	9…	81.00	2				
25	15823	Y	46.20	40.00	31.00	.	.	4…	2…	.	2…	40.00	1				
26	15824	Y	47.90	13.00	59.00	.	.	1…	5…	8.00	7…	14.00	1				
27	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2				
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1				
29	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9…	67.00	3				
30	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2				
31	15830	Y	65.80	71.00	82.00	.	.	7…	8…	42.00	7…	73.00	3				
32	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2				
33	15832	Y	.	.	.	.	.	.	.	.	.	.	.				
34	15833	Y	.	.	.	.	.	.	.	.	.	.	.				
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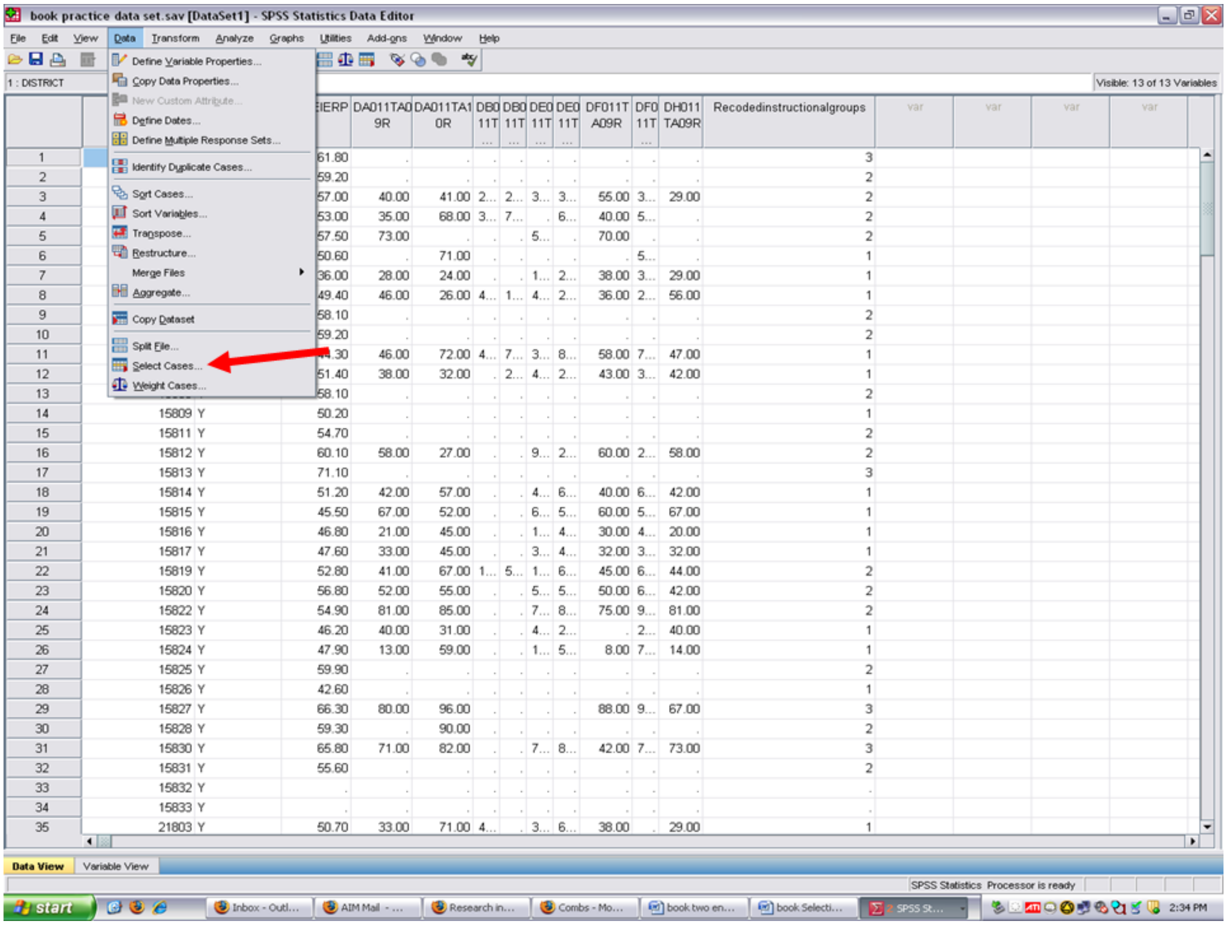
√ Select Cases



			IERP	DA011TA09R	DA011TA10R	DB011T...	DB011T...	DE011T...	DE011T...	DF011TA09R	DF011T...	DH011TA09R	Recodedinstructionalgroups
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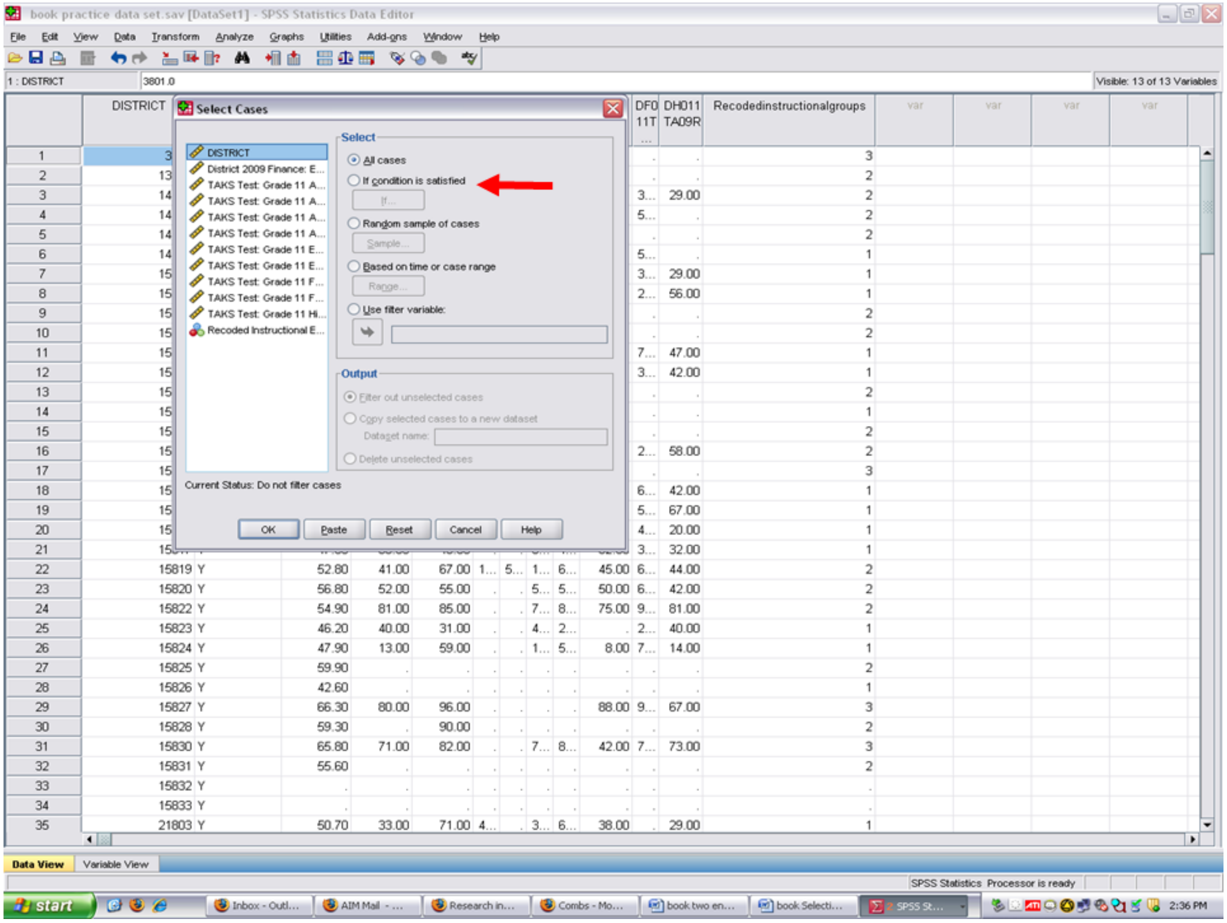
2			59.20	.	.	.	.	.	.	.	.	.	2
3			57.00	40.00	41.00	2...	2...	3...	3...	55.00	3...	29.00	2
4			53.00	35.00	68.00	3...	7...	.	6...	40.00	5...	.	2
5			57.50	73.00	.	.	.	5...	.	70.00	.	.	2
6			50.60	.	71.00	.	.	.	.	.	5...	.	1
7			36.00	28.00	24.00	.	.	1...	2...	38.00	3...	29.00	1
8			49.40	46.00	26.00	4...	1...	4...	2...	36.00	2...	56.00	1
9			58.10	.	.	.	.	.	.	.	.	.	2
10			59.20	.	.	.	.	.	.	.	.	.	2
11			4.30	46.00	72.00	4...	7...	3...	8...	58.00	7...	47.00	1
12			51.40	38.00	32.00	.	2...	4...	2...	43.00	3...	42.00	1
13			58.10	.	.	.	.	.	.	.	.	.	2
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1
15	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2
16	15812	Y	60.10	58.00	27.00	.	.	9...	2...	60.00	2...	58.00	2
17	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3
18	15814	Y	51.20	42.00	57.00	.	.	4...	6...	40.00	6...	42.00	1
19	15815	Y	45.50	67.00	52.00	.	.	6...	5...	60.00	5...	67.00	1
20	15816	Y	46.80	21.00	45.00	.	.	1...	4...	30.00	4...	20.00	1
21	15817	Y	47.60	33.00	45.00	.	.	3...	4...	32.00	3...	32.00	1
22	15819	Y	52.80	41.00	67.00	1...	5...	1...	6...	45.00	6...	44.00	2
23	15820	Y	56.80	52.00	55.00	.	.	5...	5...	50.00	6...	42.00	2
24	15822	Y	54.90	81.00	85.00	.	.	7...	8...	75.00	9...	81.00	2
25	15823	Y	46.20	40.00	31.00	.	.	4...	2...	.	2...	40.00	1
26	15824	Y	47.90	13.00	59.00	.	.	1...	5...	8.00	7...	14.00	1
27	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1
29	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9...	67.00	3
30	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2
31	15830	Y	65.80	71.00	82.00	.	.	7...	8...	42.00	7...	73.00	3
32	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2
33	15832	Y	.	.	.	.	.	.	.	.	.	.	.
34	15833	Y	.	.	.	.	.	.	.	.	.	.	.
35	21803	Y	50.70	33.00	71.00	4...	.	3...	6...	38.00	.	29.00	1

You will note that All Cases is checked. You should click on the

√ If Condition is satisfied


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT 3801.0
Visible: 13 of 13 Variables
Select Cases
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 A...
Recoded Instructional E...
Select
If...
Sample...
Range...
Output
Dataset name:
OK Paste Reset Cancel Help
Data View Variable View
SPSS Statistics Processor is ready
start
2:36 PM

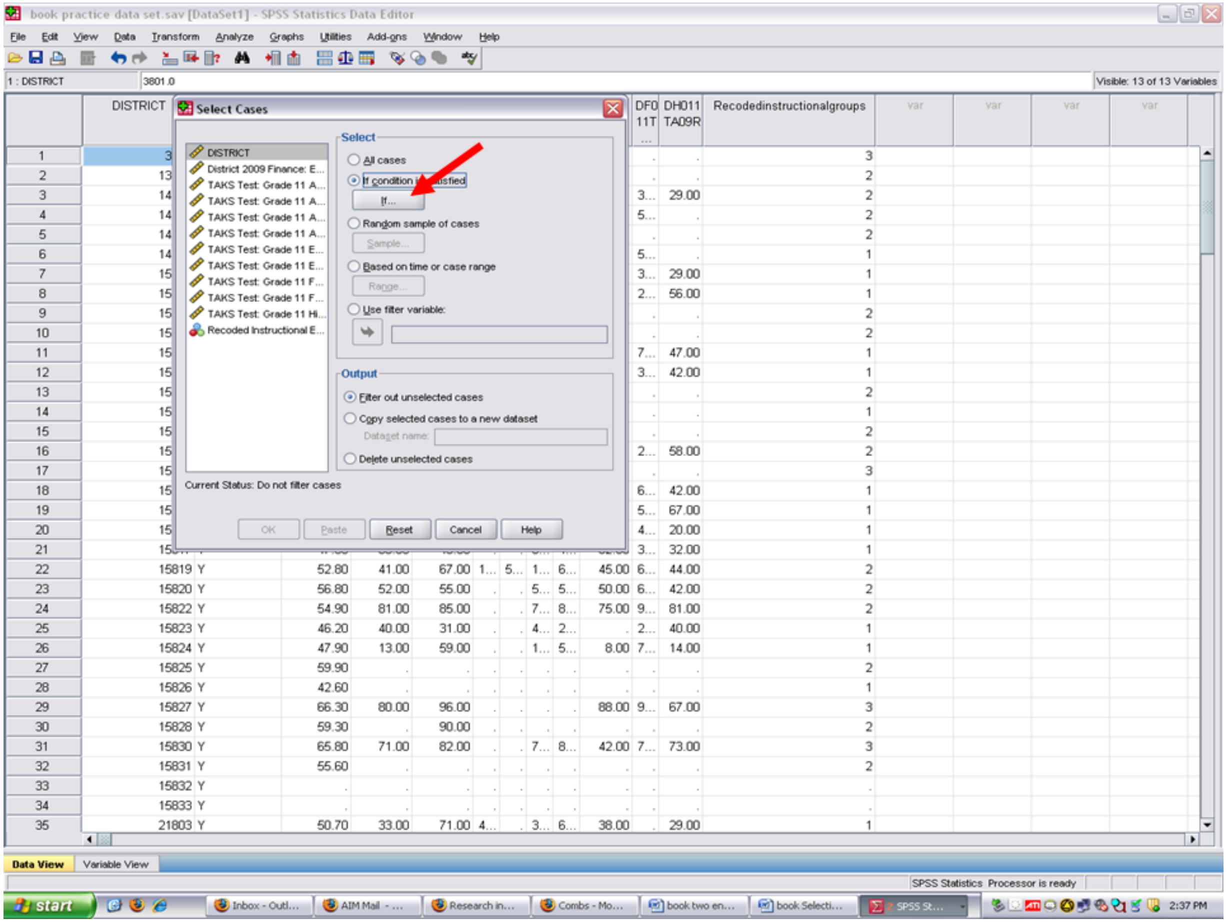
Select
● All cases
○ If condition is satisfied
○ Random sample of cases
○ Based on time or case range
○ Use filter variable:

Output
● Filter out unselected cases
○ Copy selected cases to a new dataset
○ Delete unselected cases

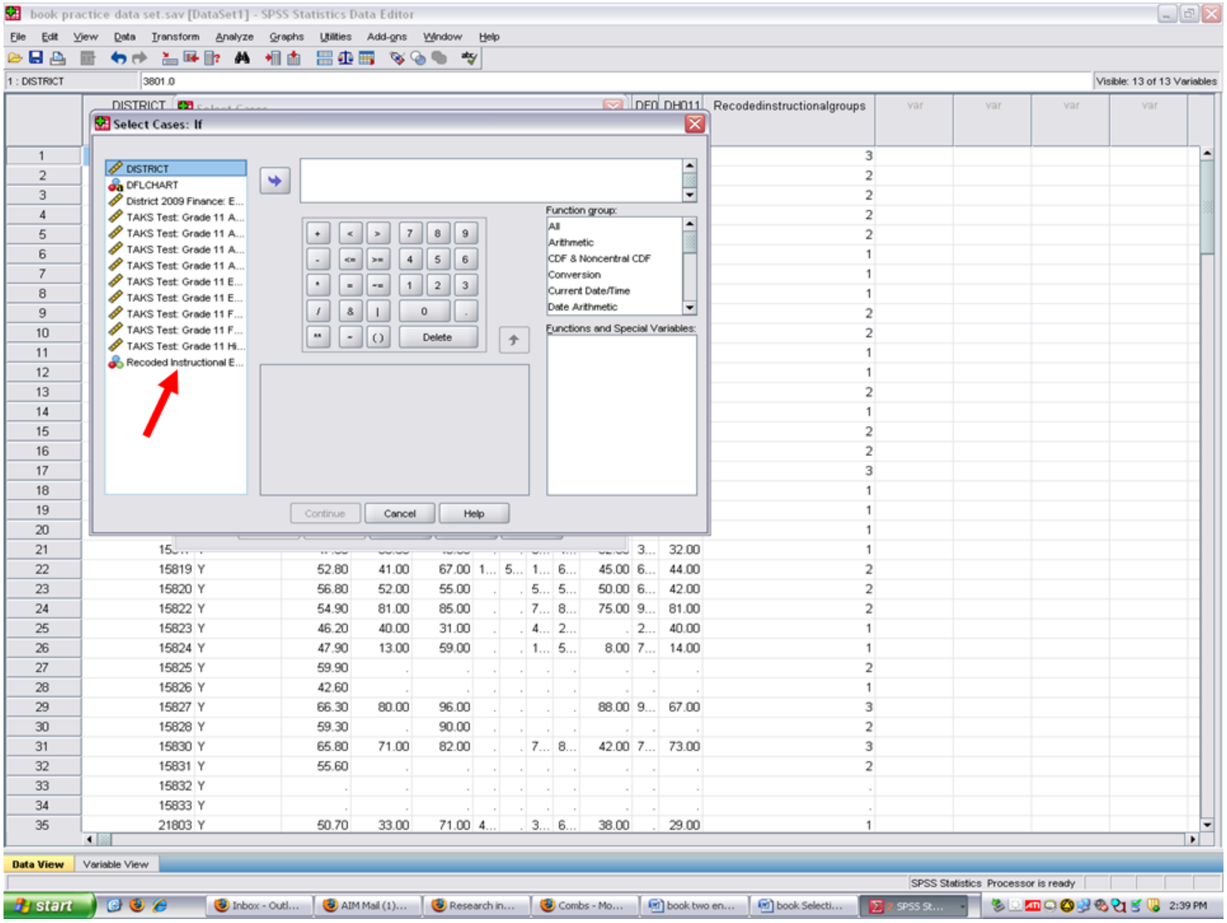
Current Status: Do not filter cases

When you click on the If Condition is satisfied, the If button then becomes activated.

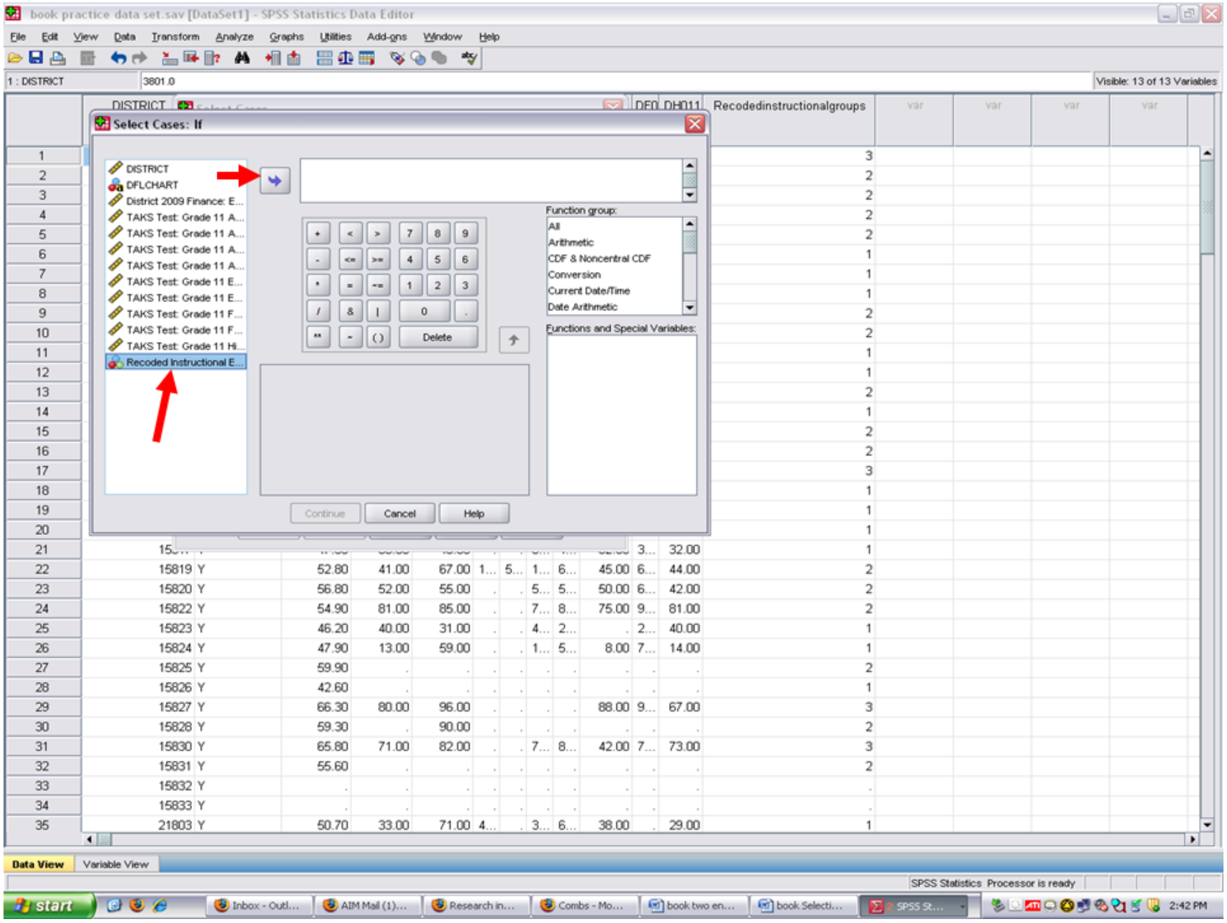
√ Click on the If, under the If Condition is satisfied.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT 3801.0
Visible: 13 of 13 Variables
Select Cases
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 A...
TAKS Test: Grade 11 E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Select
○ All cases
● If condition is satisfied
If...
○ Random sample of cases
Sample...
○ Based on time or case range
Range...
○ Use filter variable:
Output
● Filter out unselected cases
○ Copy selected cases to a new dataset
Dataset name:
○ Delete unselected cases
Current Status: Do not filter cases
OK
Paste
Reset
Cancel
Help
DISTRICT
Recodedinstructionalgroups
var
Data View
Variable View
SPSS Statistics Processor is ready
start
2:37 PM

Clicking on the If opens up this screen. We will have to send over the name of the grouping variable, Recoded Instructional Expenditures into 3 groups.

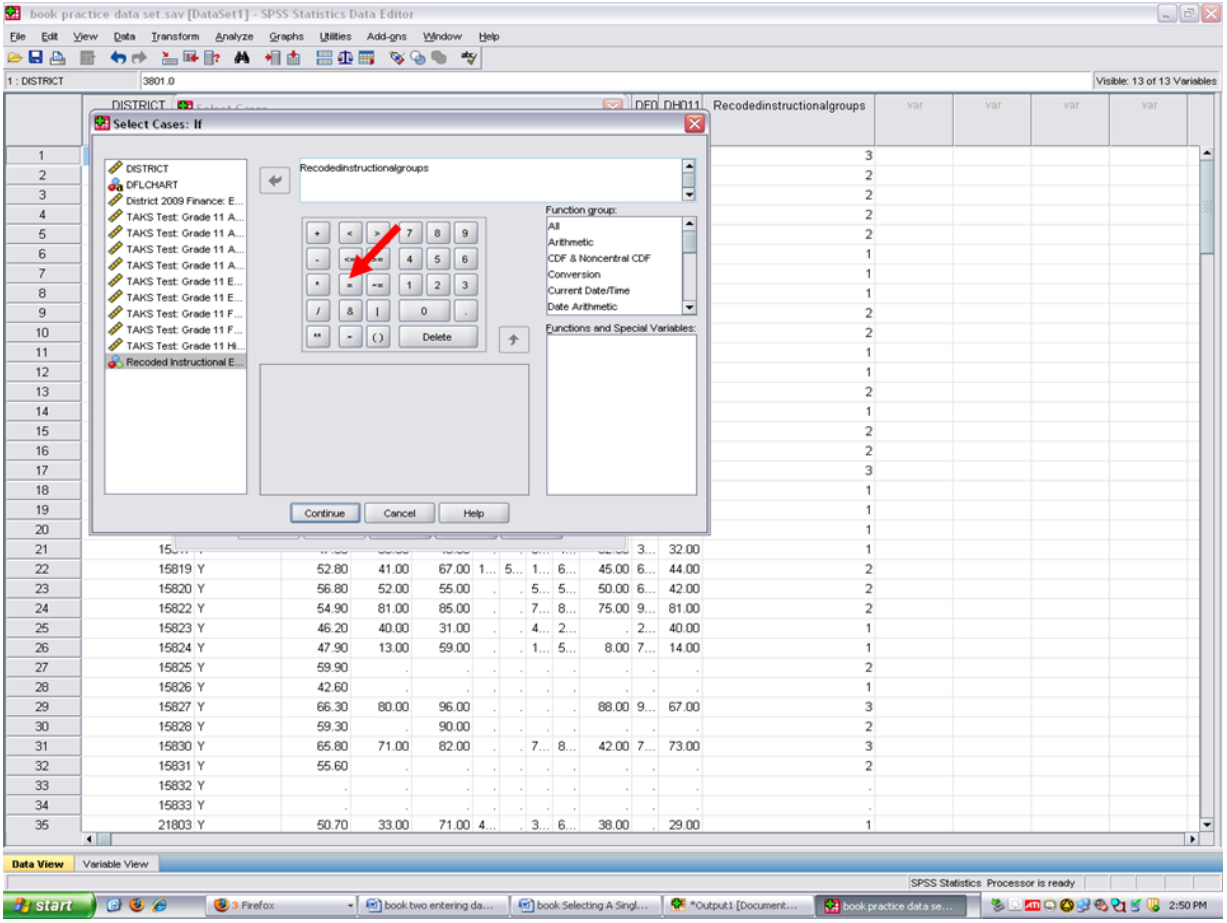

book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT 3801.0
Visible: 13 of 13 Variables
Select Cases: If
DISTRICT
DFLCHART
District 2009 Finance: E...
TAKS Test: Grade 11 A...
TAKS Test: Grade 11 E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Function group:
All
Arithmetic
CDF & Noncentral CDF
Conversion
Current Date/Time
Date Arithmetic
Functions and Special Variables:
Delete
Continue
Cancel
Help
Recodedinstructionalgroups
Data View
Variable View
SPSS Statistics Processor is ready
start
2:39 PM

√ Click on the Recoded Instructional Expenditures into 3 groups variable and then on the right arrow key.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT 3801.0
Visible: 13 of 13 Variables
Select Cases: If
DISTRICT
DFLCHART
District 2009 Finance: E...
TAKS Test: Grade 11 A...
TAKS Test: Grade 11 E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Function group:
All
Arithmetic
CDF & Noncentral CDF
Conversion
Current Date/Time
Date Arithmetic
Functions and Special Variables:
Delete
Continue
Cancel
Help
Recodedinstructionalgroups
var
Data View
Variable View
SPSS Statistics Processor is ready
start
2:42 PM

Now the grouping variable has been placed into the empty rectangle, we can now begin the process of selecting the specific group of interest.

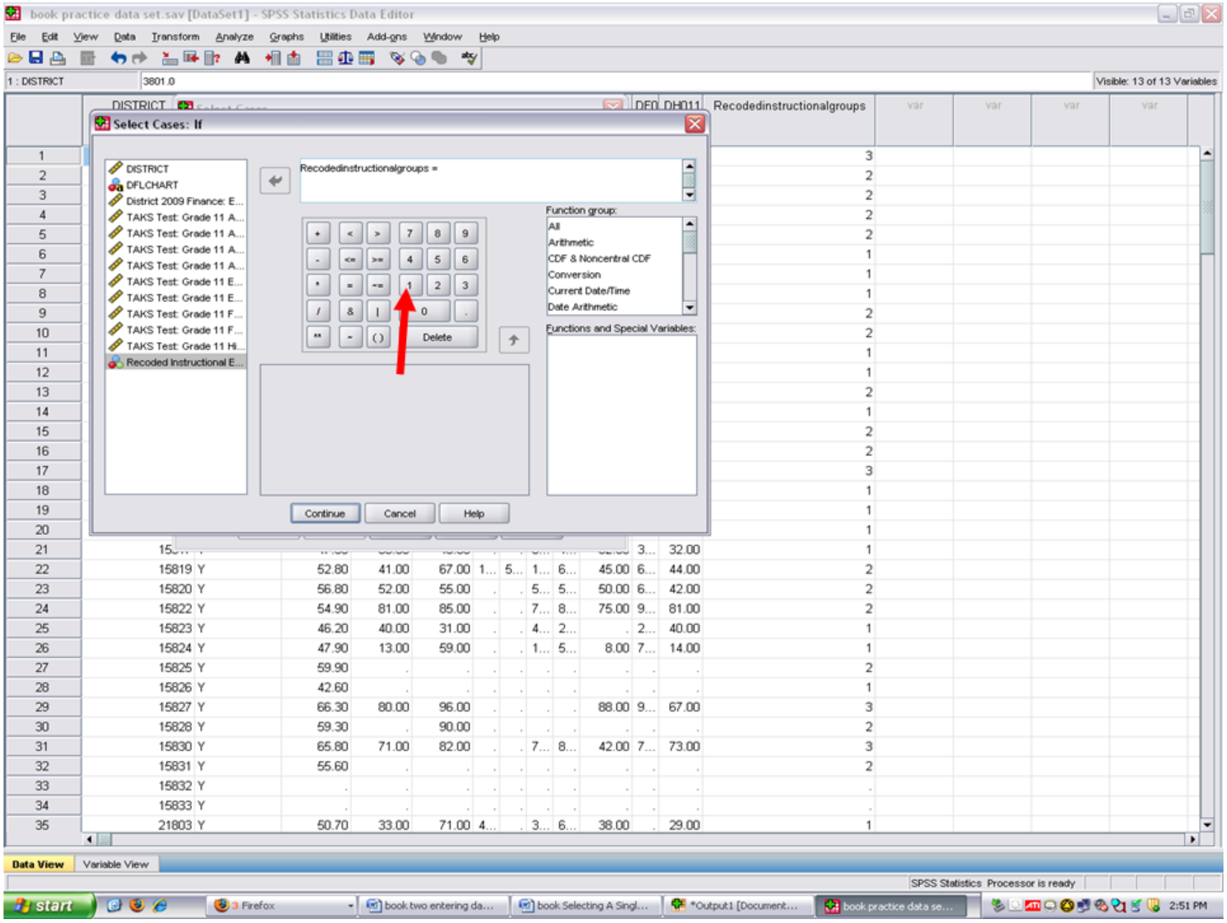
√ Click on the = sign



After clicking on the = sign, it appears to the right of the grouping variable in the rectangle.

√ Click on the number of the group on which you want to calculate statistics. In our case, we want to use group # 1 (remember our previous steps in identifying the Poorest Financed School Districts.

In this case we will click on 1.

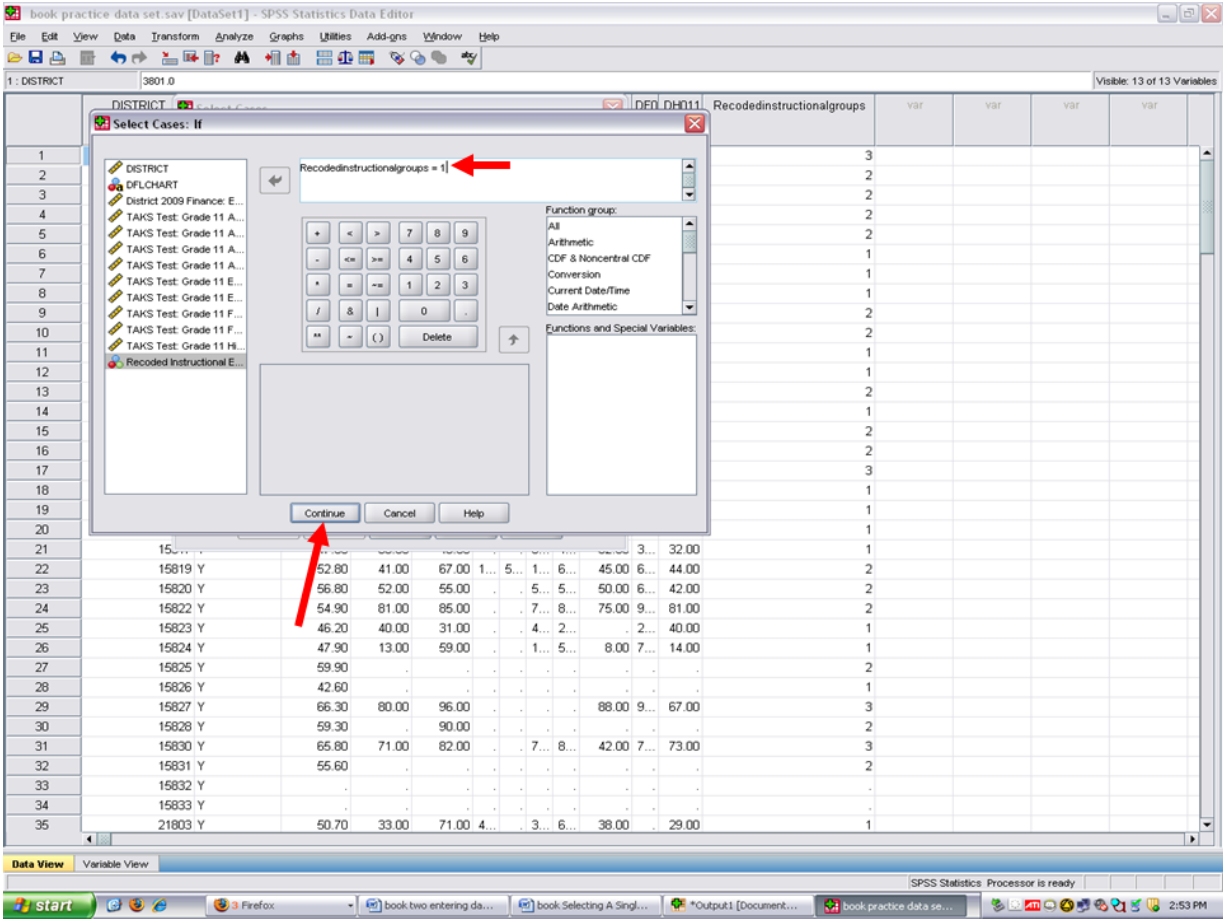


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
Visible: 13 of 13 Variables
Select Cases: If
DISTRICT
DFLCHART
District 2009 Finance: E...
TAKS Test: Grade 11 A...
TAKS Test: Grade 11 E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Function group:
All
Arithmetic
CDF & Noncentral CDF
Conversion
Current Date/Time
Date Arithmetic
Functions and Special Variables:
Delete
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start

1 : DISTRICT 3801.0

Recodedinstructionalgroups = 1

We have now informed SPSS that we want to select out only those Poorest Financed School Districts for statistical analyses.

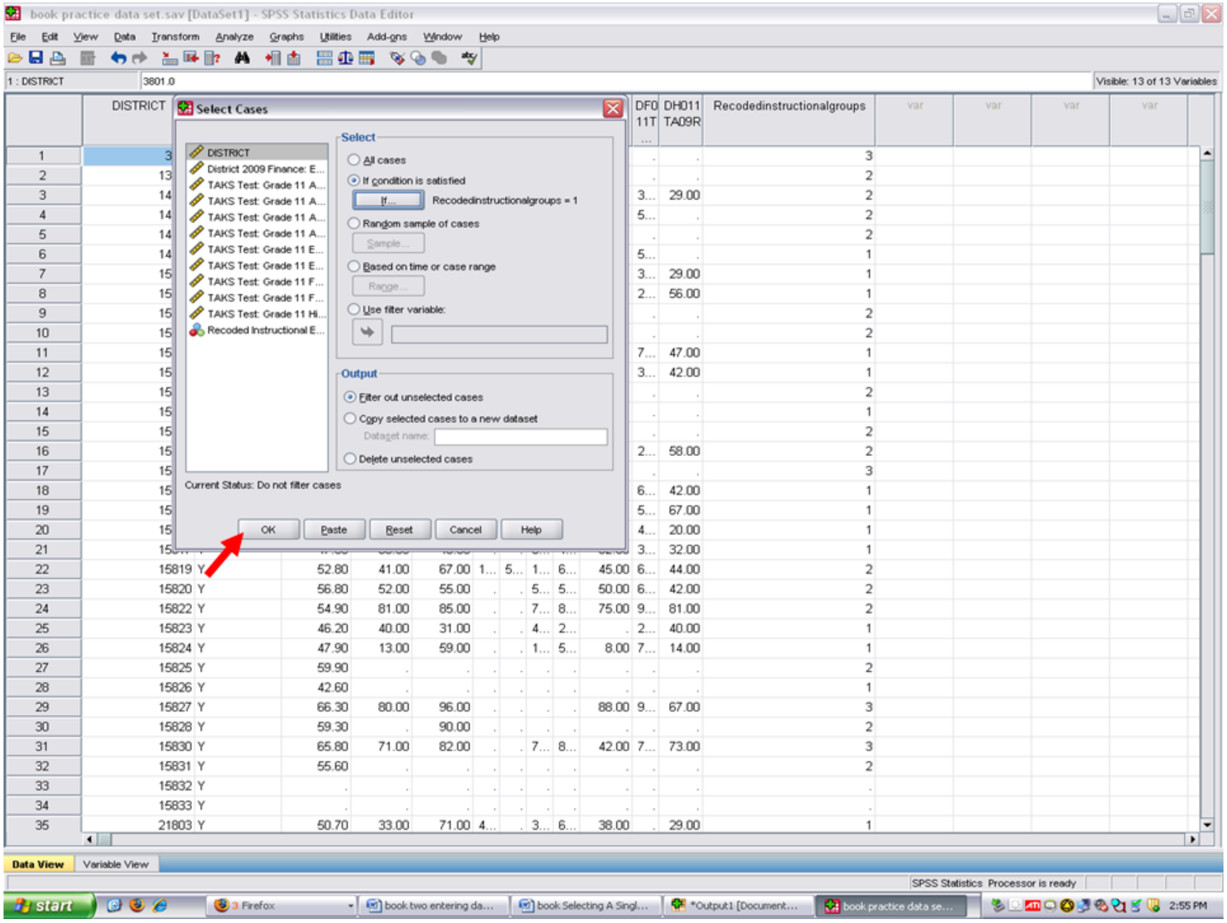

book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Select Cases: If
Continue
Cancel
Help
Function group:
Functions and Special Variables:
Delete
Data View
Variable View
SPSS Statistics Processor is ready

Recodedinstructionalgroups = 1

√ **Click on Continue above.**

√ **After clicking on continue, this screen appears.**

√ **Click on OK.**


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
Visible: 13 of 13 Variables
Select Cases
Data View
Variable View
SPSS Statistics Processor is ready
start

Select
○ All cases
● If condition is satisfied
If... Recodedinstructionalgroups = 1
○ Random sample of cases
○ Based on time or case range
○ Use filter variable:

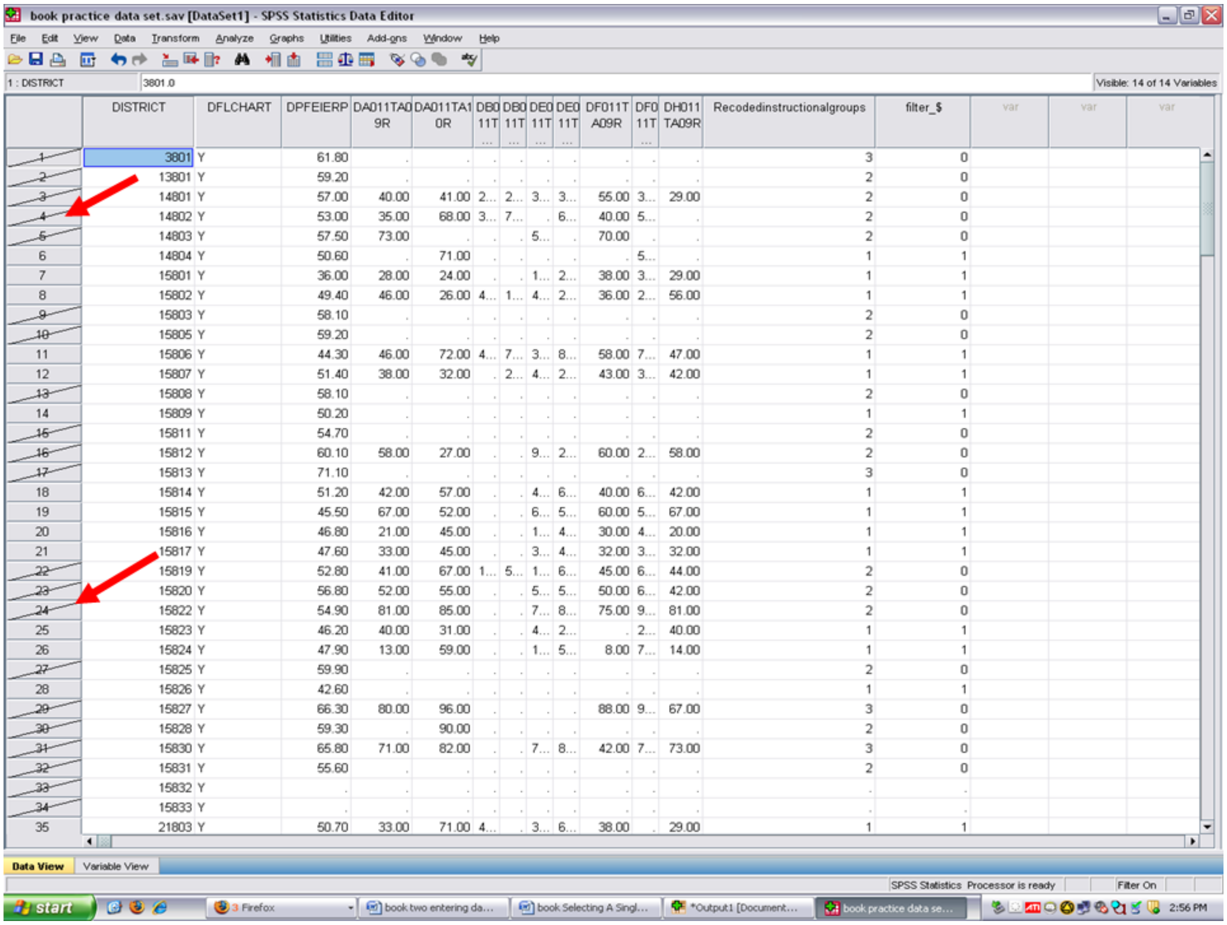
Output
● Filter out unselected cases
○ Copy selected cases to a new dataset
Dataset name:
○ Delete unselected cases

Current Status: Do not filter cases

OK
Paste
Reset
Cancel
Help

You will now be sent to your output file. Click on the data file and data view.

In the data view screen, you will note that the Moderately Financed School Districts and the Best Financed School Districts have been marked through. The only active cases on which SPSS will calculate statistics are the Poorest Financed School Districts (group = 1).


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
3801.0
Visible: 14 of 14 Variables
Data View
Variable View
SPSS Statistics Processor is ready
Filter On
start
3 Firefox
book two entering da...
book Selecting A Singl...
*Output1 [Document...
book practice data se...
2:56 PM

	DISTRICT	DFLCHART	DPFEIERP	DA011TA09R	DA011TA10R	DB0 11T ...	DB0 11T ...	DE0 11T ...	DE0 11T ...	DF011TA09R	DF0 11T ...	DH011TA09R	Recodedinstructionalgroups	filter_$	var	var	var
~~1~~	3801	Y	61.80	.	.	.	.	.	.	.	.	.	3	0			
~~2~~	13801	Y	59.20	.	.	.	.	.	.	.	.	.	2	0			
~~3~~	14801	Y	57.00	40.00	41.00	2...	2...	3...	3...	55.00	3...	29.00	2	0			
~~4~~	14802	Y	53.00	35.00	68.00	3...	7...	.	6...	40.00	5...	.	2	0			
~~5~~	14803	Y	57.50	73.00	.	.	.	5...	.	70.00	.	.	2	0			
6	14804	Y	50.60	.	71.00	.	.	.	.	.	5...	.	1	1			
7	15801	Y	36.00	28.00	24.00	.	.	1...	2...	38.00	3...	29.00	1	1			
8	15802	Y	49.40	46.00	26.00	4...	1...	4...	2...	36.00	2...	56.00	1	1			
~~9~~	15803	Y	58.10	.	.	.	.	.	.	.	.	.	2	0			
~~10~~	15805	Y	59.20	.	.	.	.	.	.	.	.	.	2	0			
11	15806	Y	44.30	46.00	72.00	4...	7...	3...	8...	58.00	7...	47.00	1	1			
12	15807	Y	51.40	38.00	32.00	.	2...	4...	2...	43.00	3...	42.00	1	1			
~~13~~	15808	Y	58.10	.	.	.	.	.	.	.	.	.	2	0			
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1	1			
~~15~~	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2	0			
~~16~~	15812	Y	60.10	58.00	27.00	.	.	9...	2...	60.00	2...	58.00	2	0			
~~17~~	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3	0			
18	15814	Y	51.20	42.00	57.00	.	.	4...	6...	40.00	6...	42.00	1	1			
19	15815	Y	45.50	67.00	52.00	.	.	6...	5...	60.00	5...	67.00	1	1			
20	15816	Y	46.80	21.00	45.00	.	.	1...	4...	30.00	4...	20.00	1	1			
21	15817	Y	47.60	33.00	45.00	.	.	3...	4...	32.00	3...	32.00	1	1			
~~22~~	15819	Y	52.80	41.00	67.00	1...	5...	1...	6...	45.00	6...	44.00	2	0			
~~23~~	15820	Y	56.80	52.00	55.00	.	.	5...	5...	50.00	6...	42.00	2	0			
~~24~~	15822	Y	54.90	81.00	85.00	.	.	7...	8...	75.00	9...	81.00	2	0			
25	15823	Y	46.20	40.00	31.00	.	.	4...	2...	.	2...	40.00	1	1			
26	15824	Y	47.90	13.00	59.00	.	.	1...	5...	8.00	7...	14.00	1	1			
~~27~~	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2	0			
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1	1			
~~29~~	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9...	67.00	3	0			
~~30~~	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2	0			
~~31~~	15830	Y	65.80	71.00	82.00	.	.	7...	8...	42.00	7...	73.00	3	0			
~~32~~	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2	0			
~~33~~	15832	Y	.	.	.	.	.	.	.	.	.	.	.	.			
~~34~~	15833	Y	.	.	.	.	.	.	.	.	.	.	.	.			
35	21803	Y	50.70	33.00	71.00	4...	.	3...	6...	38.00	.	29.00	1	1			

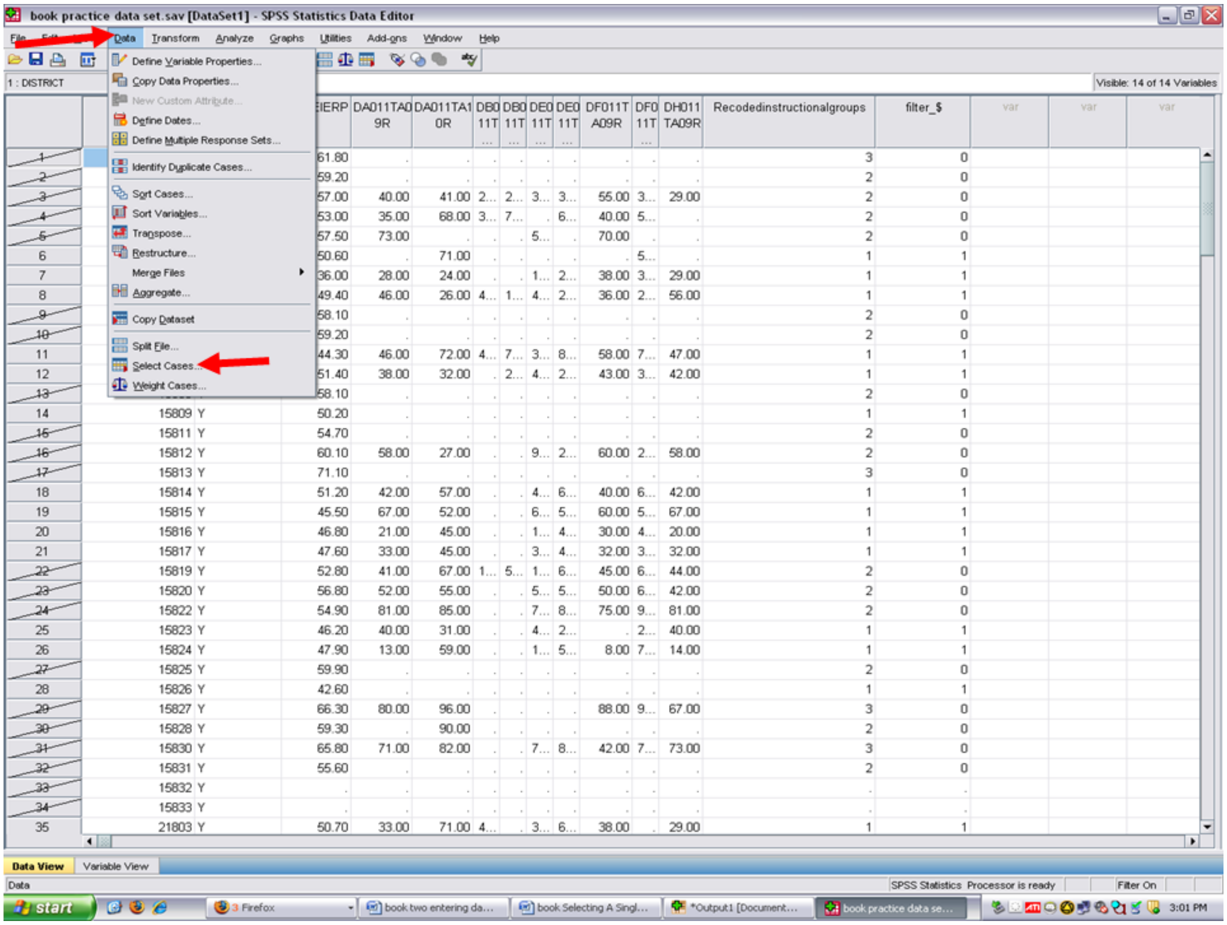
At this point, you can calculate descriptive statistics or other analyses. Such calculations will only have the Poorest Financed School Districts in them.

After obtaining the calculations of interest for this group, if you wish to select the Best Financed School Districts, you would follow the steps above in selecting group 1. Replace group = 1, with group = 2.

If you intend to analyze all cases (i.e., have all three groups back together), follow these steps.

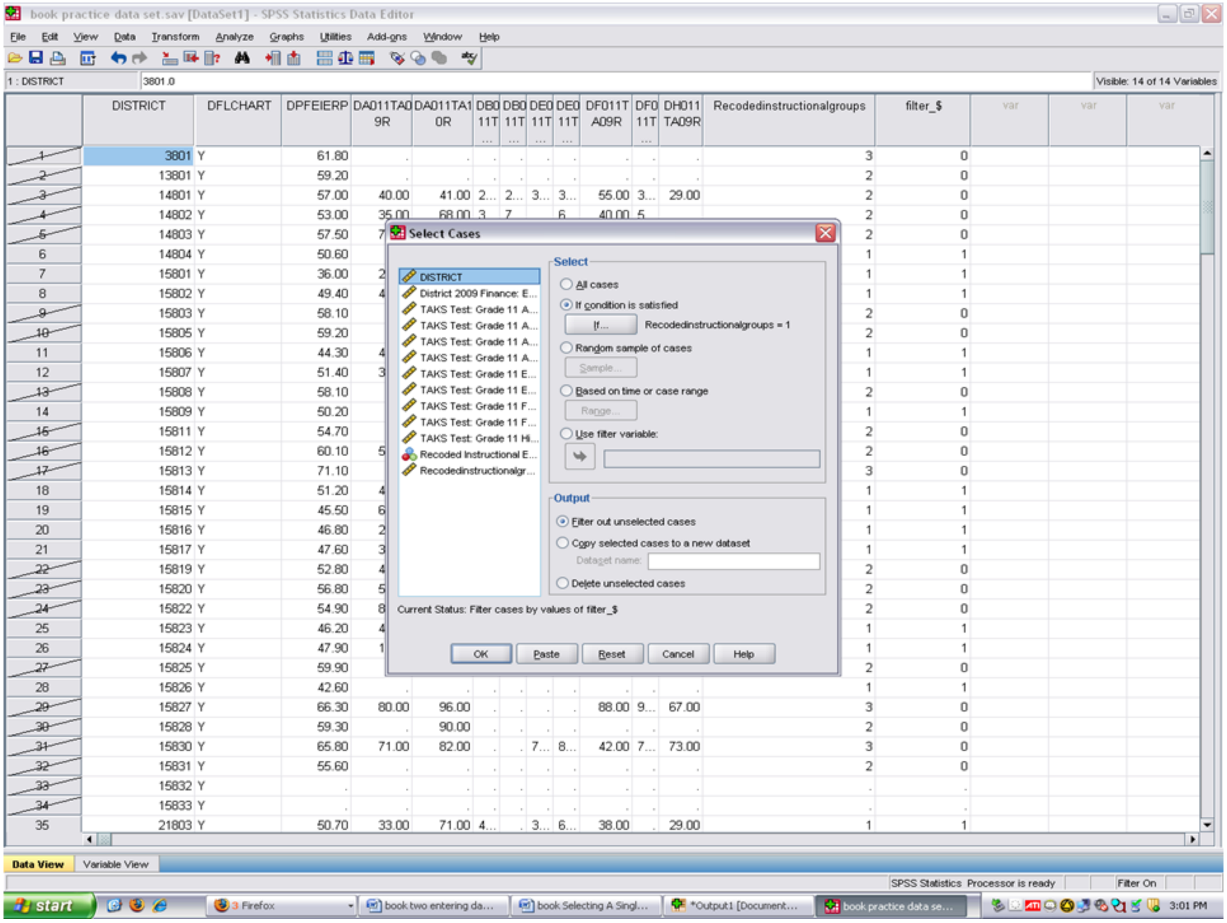
√ Click on Data

√ Click on Select Cases



			ERP	DA011TA09R	DA011TA10R	DB011T...	DB011T...	DE011T...	DE011T...	DF011TA09R	DF011T...	DH011TA09R	Recodedinstructionalgroups	filter_$	var	var	var
1			61.80	.	.	.	.	.	.	.	.	.	3	0			
2			59.20	.	.	.	.	.	.	.	.	.	2	0			
3			57.00	40.00	41.00	2...	2...	3...	3...	55.00	3...	29.00	2	0			
4			53.00	35.00	68.00	3...	7...	.	6...	40.00	5...	.	2	0			
5			57.50	73.00	.	.	.	5...	.	70.00	.	.	2	0			
6			50.60	.	71.00	.	.	.	.	.	5...	.	1	1			
7			36.00	28.00	24.00	.	.	1...	2...	38.00	3...	29.00	1	1			
8			49.40	46.00	26.00	4...	1...	4...	2...	36.00	2...	56.00	1	1			
9			58.10	.	.	.	.	.	.	.	.	.	2	0			
10			59.20	.	.	.	.	.	.	.	.	.	2	0			
11			44.30	46.00	72.00	4...	7...	3...	8...	58.00	7...	47.00	1	1			
12			51.40	38.00	32.00	.	2...	4...	2...	43.00	3...	42.00	1	1			
13			58.10	.	.	.	.	.	.	.	.	.	2	0			
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1	1			
15	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2	0			
16	15812	Y	60.10	58.00	27.00	.	.	9...	2...	60.00	2...	58.00	2	0			
17	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3	0			
18	15814	Y	51.20	42.00	57.00	.	.	4...	6...	40.00	6...	42.00	1	1			
19	15815	Y	45.50	67.00	52.00	.	.	6...	5...	60.00	5...	67.00	1	1			
20	15816	Y	46.80	21.00	45.00	.	.	1...	4...	30.00	4...	20.00	1	1			
21	15817	Y	47.60	33.00	45.00	.	.	3...	4...	32.00	3...	32.00	1	1			
22	15819	Y	52.80	41.00	67.00	1...	5...	1...	6...	45.00	6...	44.00	2	0			
23	15820	Y	56.80	52.00	55.00	.	.	5...	5...	50.00	6...	42.00	2	0			
24	15822	Y	54.90	81.00	85.00	.	.	7...	8...	75.00	9...	81.00	2	0			
25	15823	Y	46.20	40.00	31.00	.	.	4...	2...	.	2...	40.00	1	1			
26	15824	Y	47.90	13.00	59.00	.	.	1...	5...	8.00	7...	14.00	1	1			
27	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2	0			
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1	1			
29	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9...	67.00	3	0			
30	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2	0			
31	15830	Y	65.80	71.00	82.00	.	.	7...	8...	42.00	7...	73.00	3	0			
32	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2	0			
33	15832	Y	.	.	.	.	.	.	.	.	.	.	.	.			
34	15833	Y	.	.	.	.	.	.	.	.	.	.	.	.			
35	21803	Y	50.70	33.00	71.00	4...	.	3...	6...	38.00	.	29.00	1	1			

After clicking on Select Cases, this screen will appear.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT 3801.0
Visible: 14 of 14 Variables
Data View Variable View
SPSS Statistics Processor is ready
Filter On

Select Cases

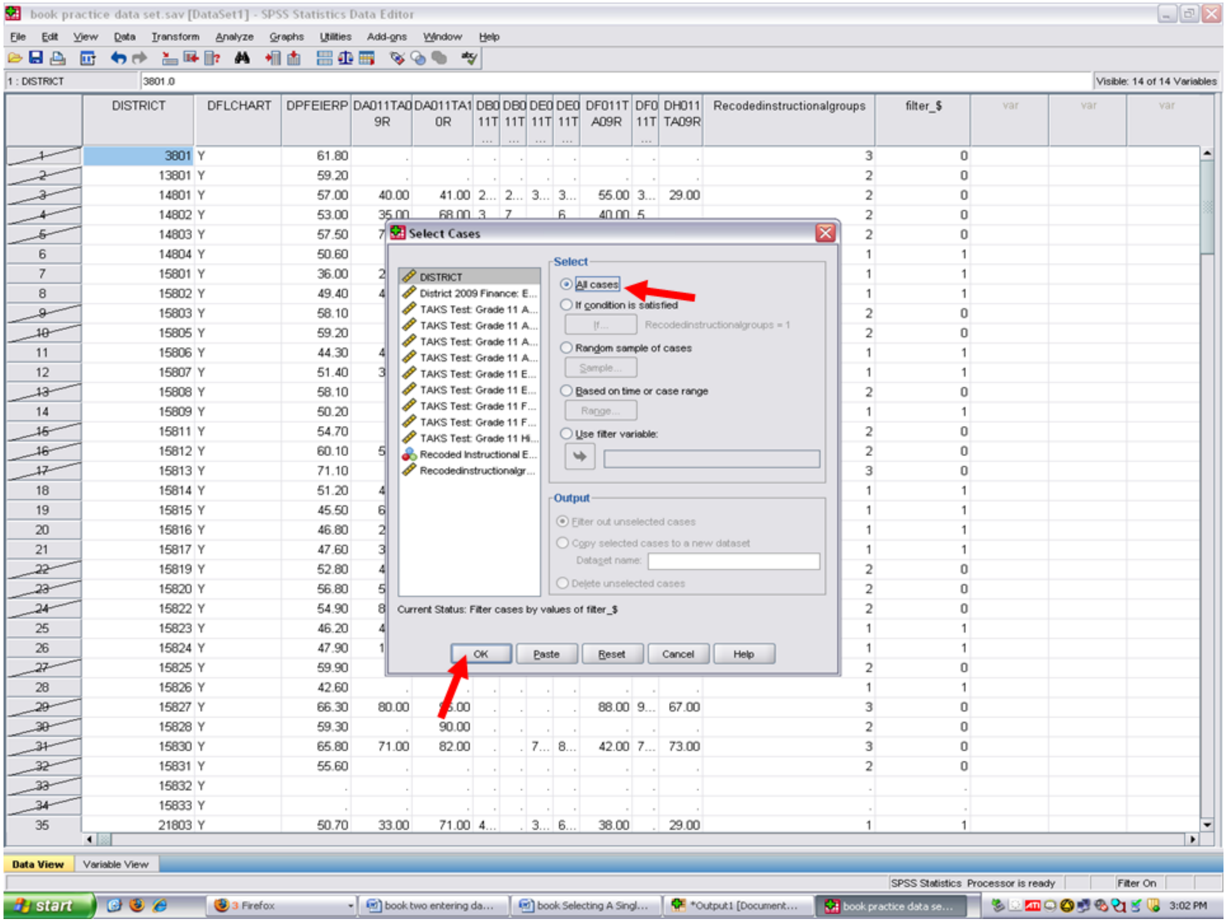
DISTRICT; District 2009 Finance: E...; TAKS Test: Grade 11 A...; TAKS Test: Grade 11 A...; TAKS Test: Grade 11 A...; TAKS Test: Grade 11 A...; TAKS Test: Grade 11 E...; TAKS Test: Grade 11 E...; TAKS Test: Grade 11 F...; TAKS Test: Grade 11 F...; TAKS Test: Grade 11 Hi...; Recoded Instructional E...; Recodedinstructionalgr...

Select
- ○ All cases
- ● If condition is satisfied
  - If... Recodedinstructionalgroups = 1
- ○ Random sample of cases
- ○ Based on time or case range
- ○ Use filter variable:

Output
- ● Filter out unselected cases
- ○ Copy selected cases to a new dataset
  - Dataset name:
- ○ Delete unselected cases

Current Status: Filter cases by values of filter_$

√ Click on All Cases

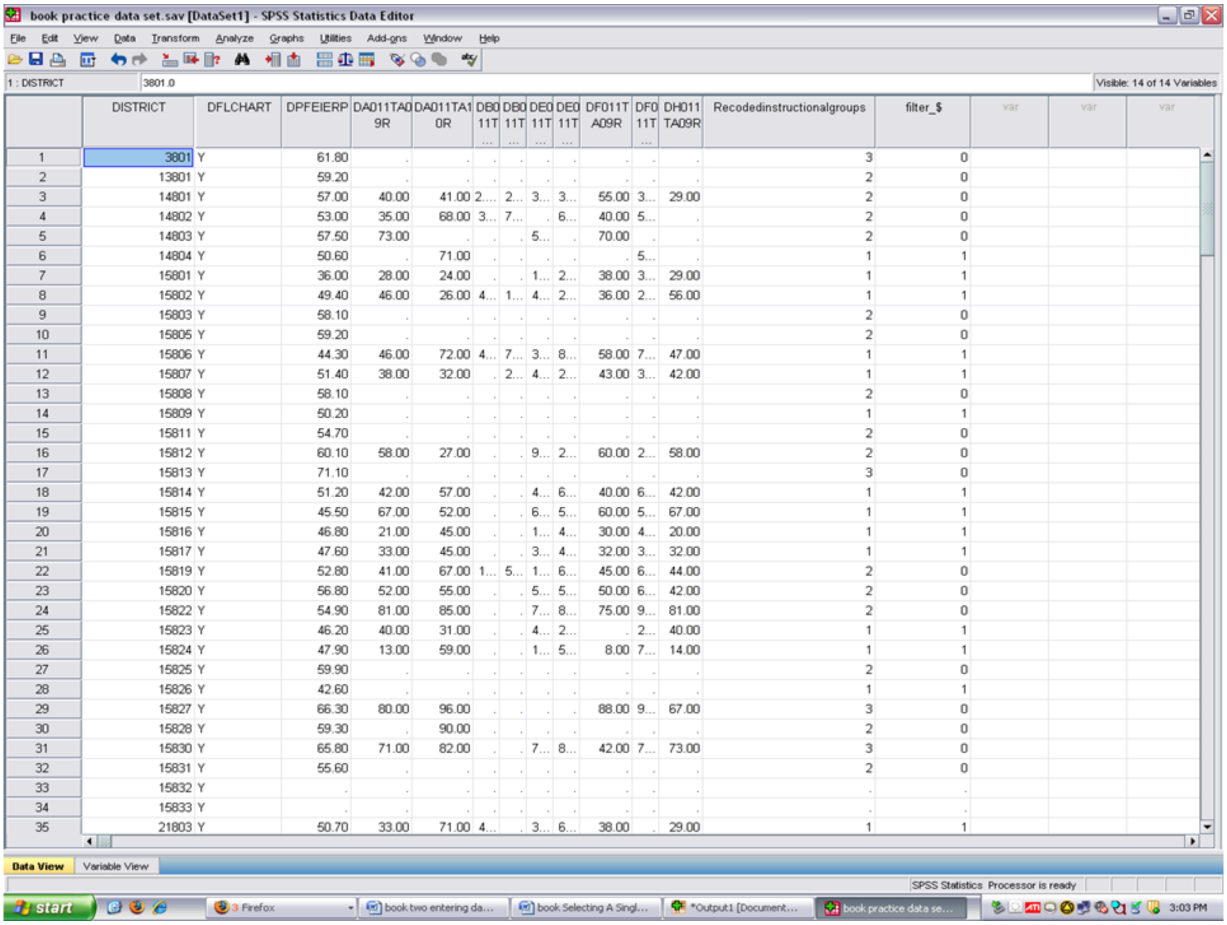

book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
3801.0
Visible: 14 of 14 Variables
Select Cases
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 A...
TAKS Test: Grade 11 E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Recodedinstructionalgr...
Select
All cases
If condition is satisfied
If...
Recodedinstructionalgroups = 1
Random sample of cases
Sample...
Based on time or case range
Range...
Use filter variable:
Output
Filter out unselected cases
Copy selected cases to a new dataset
Dataset name:
Delete unselected cases
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
Filter On
start
3:02 PM

Select: ● All cases

Current Status: Filter cases by values of filter_$

√ Click on OK above.

You will now note that no cases are crossed through. SPSS will now use all three groups in its analyses.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
3801.0
Visible: 14 of 14 Variables
Data View
Variable View
SPSS Statistics Processor is ready
start
3 Firefox
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book Selecting A Singl…
*Output1 [Document…
book practice data se…
3:03 PM

	DISTRICT	DFLCHART	DPFEIERP	DA011TA09R	DA011TA10R	DB011T…	DB011T…	DE011T…	DE011T…	DF011TA09R	DF011T…	DH011TA09R	Recodedinstructionalgroups	filter_$	var	var	var
1	3801	Y	61.80	.	.	.	.	.	.	.	.	.	3	0			
2	13801	Y	59.20	.	.	.	.	.	.	.	.	.	2	0			
3	14801	Y	57.00	40.00	41.00	2.…	2…	3…	3…	55.00	3…	29.00	2	0			
4	14802	Y	53.00	35.00	68.00	3…	7…	.	6…	40.00	5…	.	2	0			
5	14803	Y	57.50	73.00	.	.	.	5…	.	70.00	.	.	2	0			
6	14804	Y	50.60	.	71.00	.	.	.	.	.	5…	.	1	1			
7	15801	Y	36.00	28.00	24.00	.	.	1…	2…	38.00	3…	29.00	1	1			
8	15802	Y	49.40	46.00	26.00	4…	1…	4…	2…	36.00	2…	56.00	1	1			
9	15803	Y	58.10	.	.	.	.	.	.	.	.	.	2	0			
10	15805	Y	59.20	.	.	.	.	.	.	.	.	.	2	0			
11	15806	Y	44.30	46.00	72.00	4…	7…	3…	8…	58.00	7…	47.00	1	1			
12	15807	Y	51.40	38.00	32.00	.	2…	4…	2…	43.00	3…	42.00	1	1			
13	15808	Y	58.10	.	.	.	.	.	.	.	.	.	2	0			
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1	1			
15	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2	0			
16	15812	Y	60.10	58.00	27.00	.	.	9…	2…	60.00	2…	58.00	2	0			
17	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3	0			
18	15814	Y	51.20	42.00	57.00	.	.	4…	6…	40.00	6…	42.00	1	1			
19	15815	Y	45.50	67.00	52.00	.	.	6…	5…	60.00	5…	67.00	1	1			
20	15816	Y	46.80	21.00	45.00	.	.	1…	4…	30.00	4…	20.00	1	1			
21	15817	Y	47.60	33.00	45.00	.	.	3…	4…	32.00	3…	32.00	1	1			
22	15819	Y	52.80	41.00	67.00	1…	5…	1…	6…	45.00	6…	44.00	2	0			
23	15820	Y	56.80	52.00	55.00	.	.	5…	5…	50.00	6…	42.00	2	0			
24	15822	Y	54.90	81.00	85.00	.	.	7…	8…	75.00	9…	81.00	2	0			
25	15823	Y	46.20	40.00	31.00	.	.	4…	2…	.	2…	40.00	1	1			
26	15824	Y	47.90	13.00	59.00	.	.	1…	5…	8.00	7…	14.00	1	1			
27	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2	0			
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1	1			
29	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9…	67.00	3	0			
30	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2	0			
31	15830	Y	65.80	71.00	82.00	.	.	7…	8…	42.00	7…	73.00	3	0			
32	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2	0			
33	15832	Y	.	.	.	.	.	.	.	.	.	.	.	.			
34	15833	Y	.	.	.	.	.	.	.	.	.	.	.	.			
35	21803	Y	50.70	33.00	71.00	4…	.	3…	6…	38.00	.	29.00	1	1			

Recoding Data in SPSS

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

About the Authors

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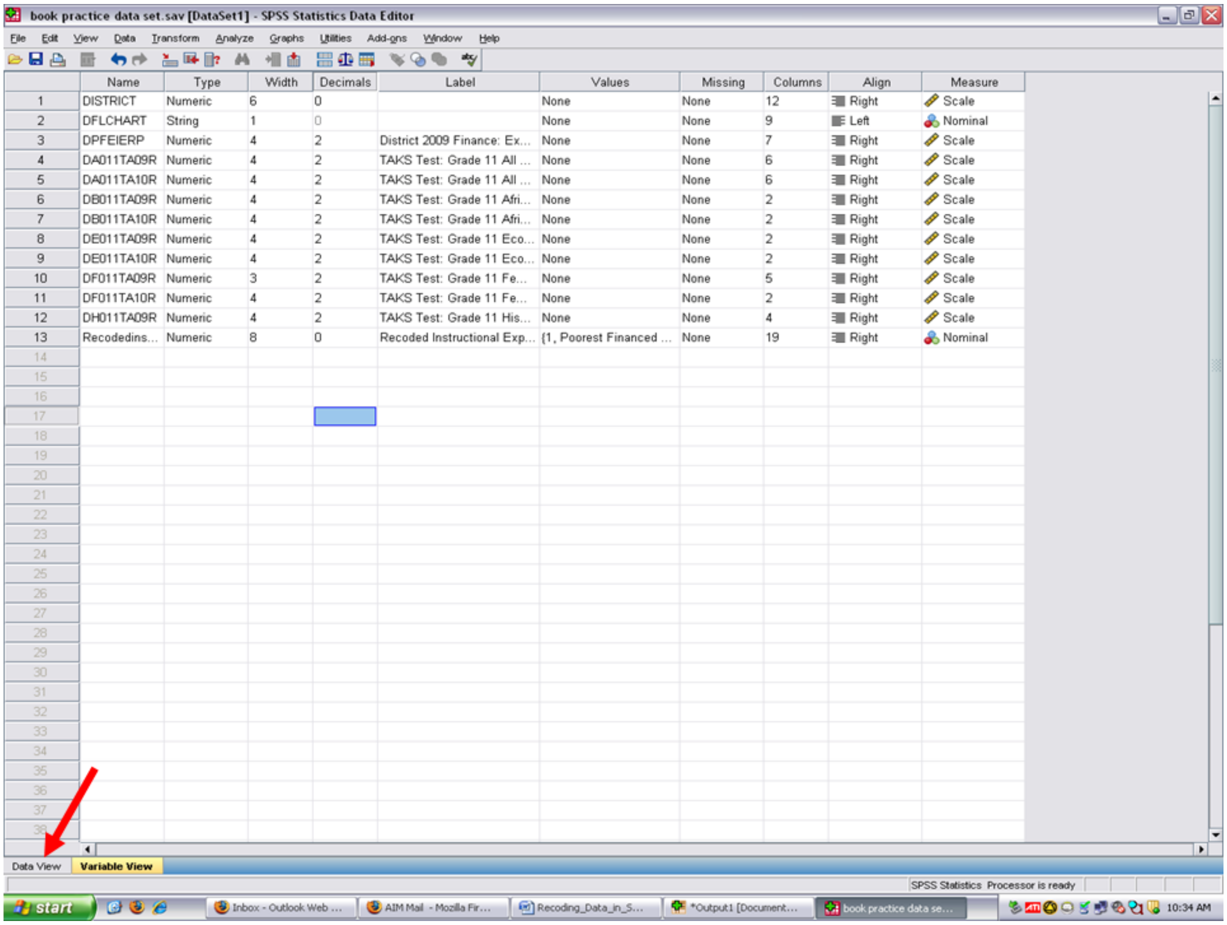
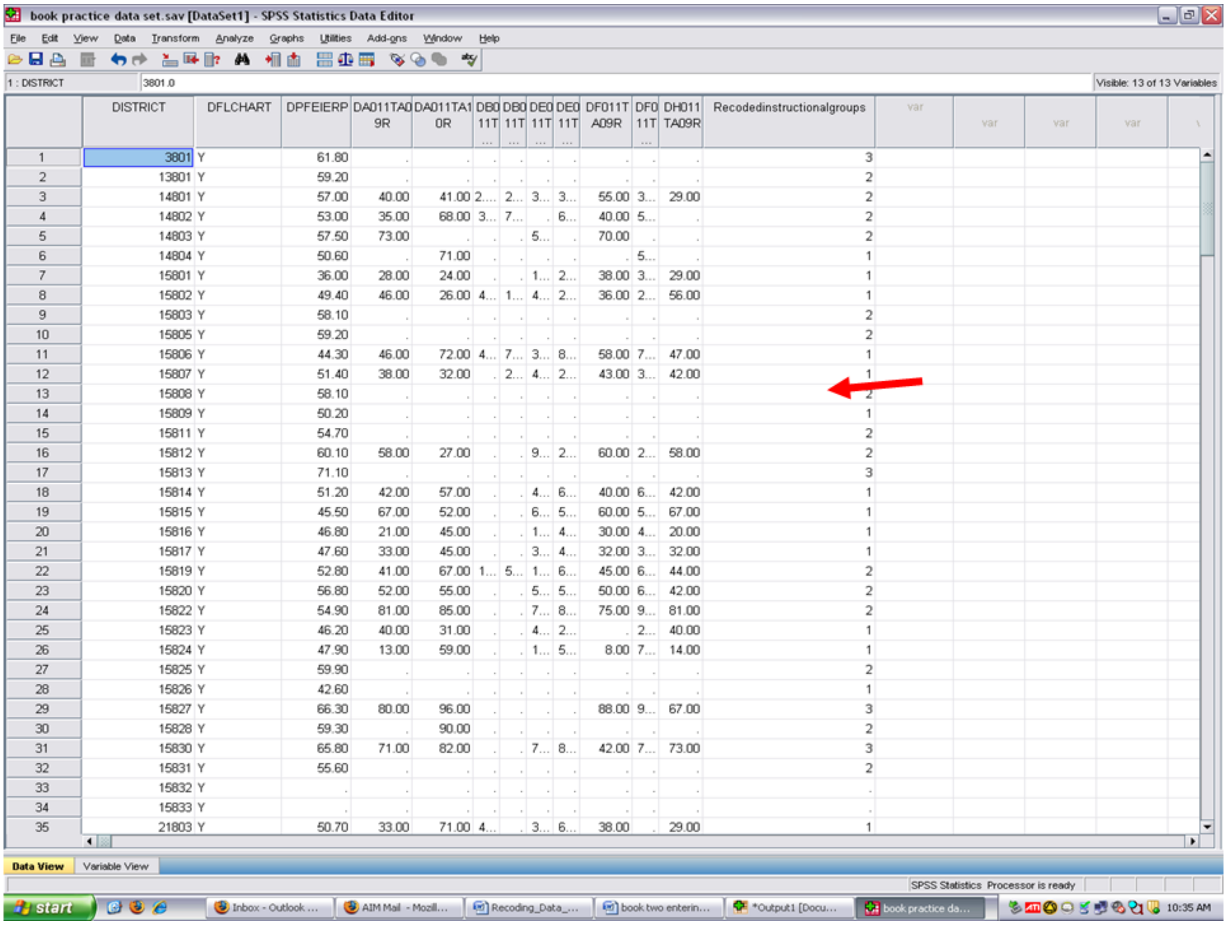
These procedures are to be followed when your data are already entered into SPSS and when you have values that you need to either remove or to recode into different values.

Work from the Data View window.



	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	DISTRICT	Numeric	6	0		None	None	12	Right	Scale
2	DFLCHART	String	1	0		None	None	9	Left	Nominal
3	DPFEIERP	Numeric	4	2	District 2009 Finance: Ex...	None	None	7	Right	Scale
4	DA011TA09R	Numeric	4	2	TAKS Test: Grade 11 All ...	None	None	6	Right	Scale
5	DA011TA10R	Numeric	4	2	TAKS Test: Grade 11 All ...	None	None	6	Right	Scale
6	DB011TA09R	Numeric	4	2	TAKS Test: Grade 11 Afri...	None	None	2	Right	Scale
7	DB011TA10R	Numeric	4	2	TAKS Test: Grade 11 Afri...	None	None	2	Right	Scale
8	DE011TA09R	Numeric	4	2	TAKS Test: Grade 11 Eco...	None	None	2	Right	Scale
9	DE011TA10R	Numeric	4	2	TAKS Test: Grade 11 Eco...	None	None	2	Right	Scale
10	DF011TA09R	Numeric	3	2	TAKS Test: Grade 11 Fe...	None	None	5	Right	Scale
11	DF011TA10R	Numeric	4	2	TAKS Test: Grade 11 Fe...	None	None	2	Right	Scale
12	DH011TA09R	Numeric	4	2	TAKS Test: Grade 11 His...	None	None	4	Right	Scale
13	Recodedins...	Numeric	8	0	Recoded Instructional Exp...	{1, Poorest Financed ...	None	19	Right	Nominal

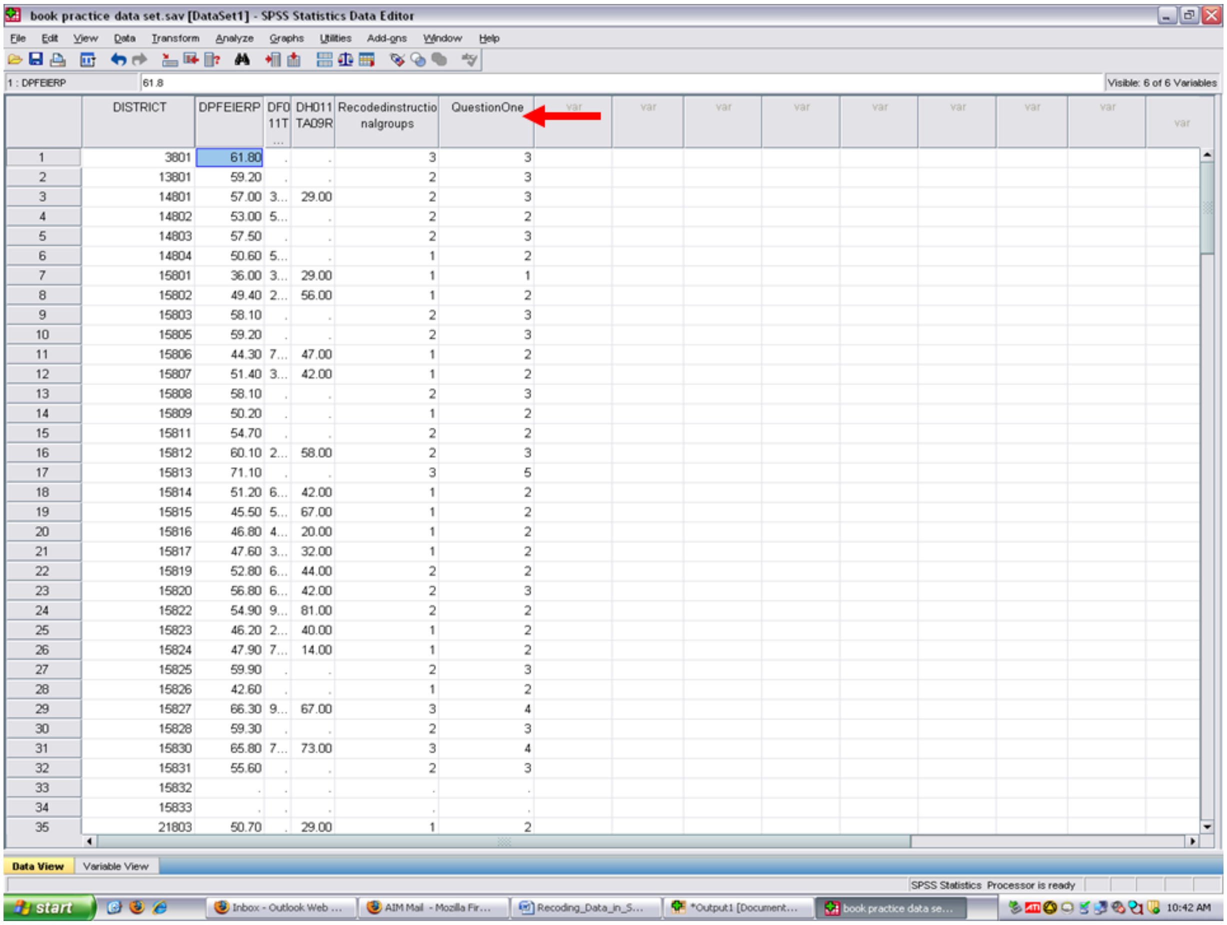
After clicking on the Data View button, your screen should look like the screen below in that you are looking at data.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DISTRICT
3801.0
Visible: 13 of 13 Variables
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook ...
AIM Mail - Mozill...
Recoding_Data_...
book two enterin...
*Output1 [Docu...
book practice da...
10:35 AM

	DISTRICT	DFLCHART	DPFEIERP	DA011TA09R	DA011TA10R	DB011T...	DB011T...	DE011T...	DE011T...	DF011TA09R	DF011T...	DH011TA09R	Recodedinstructionalgroups	var	var	var	var
1	3801	Y	61.80	.	.	.	.	.	.	.	.	.	3				
2	13801	Y	59.20	.	.	.	.	.	.	.	.	.	2				
3	14801	Y	57.00	40.00	41.00	2....	2...	3...	3...	55.00	3...	29.00	2				
4	14802	Y	53.00	35.00	68.00	3...	7...	.	6...	40.00	5...	.	2				
5	14803	Y	57.50	73.00	.	.	.	5...	.	70.00	.	.	2				
6	14804	Y	50.60	.	71.00	.	.	.	.	.	5...	.	1				
7	15801	Y	36.00	28.00	24.00	.	.	1...	2...	38.00	3...	29.00	1				
8	15802	Y	49.40	46.00	26.00	4...	1...	4...	2...	36.00	2...	56.00	1				
9	15803	Y	58.10	.	.	.	.	.	.	.	.	.	2				
10	15805	Y	59.20	.	.	.	.	.	.	.	.	.	2				
11	15806	Y	44.30	46.00	72.00	4...	7...	3...	8...	58.00	7...	47.00	1				
12	15807	Y	51.40	38.00	32.00	.	2...	4...	2...	43.00	3...	42.00	1				
13	15808	Y	58.10	.	.	.	.	.	.	.	.	.	2				
14	15809	Y	50.20	.	.	.	.	.	.	.	.	.	1				
15	15811	Y	54.70	.	.	.	.	.	.	.	.	.	2				
16	15812	Y	60.10	58.00	27.00	.	.	9...	2...	60.00	2...	58.00	2				
17	15813	Y	71.10	.	.	.	.	.	.	.	.	.	3				
18	15814	Y	51.20	42.00	57.00	.	.	4...	6...	40.00	6...	42.00	1				
19	15815	Y	45.50	67.00	52.00	.	.	6...	5...	60.00	5...	67.00	1				
20	15816	Y	46.80	21.00	45.00	.	.	1...	4...	30.00	4...	20.00	1				
21	15817	Y	47.60	33.00	45.00	.	.	3...	4...	32.00	3...	32.00	1				
22	15819	Y	52.80	41.00	67.00	1...	5...	1...	6...	45.00	6...	44.00	2				
23	15820	Y	56.80	52.00	55.00	.	.	5...	5...	50.00	6...	42.00	2				
24	15822	Y	54.90	81.00	85.00	.	.	7...	8...	75.00	9...	81.00	2				
25	15823	Y	46.20	40.00	31.00	.	.	4...	2...	.	2...	40.00	1				
26	15824	Y	47.90	13.00	59.00	.	.	1...	5...	8.00	7...	14.00	1				
27	15825	Y	59.90	.	.	.	.	.	.	.	.	.	2				
28	15826	Y	42.60	.	.	.	.	.	.	.	.	.	1				
29	15827	Y	66.30	80.00	96.00	.	.	.	.	88.00	9...	67.00	3				
30	15828	Y	59.30	.	90.00	.	.	.	.	.	.	.	2				
31	15830	Y	65.80	71.00	82.00	.	.	7...	8...	42.00	7...	73.00	3				
32	15831	Y	55.60	.	.	.	.	.	.	.	.	.	2				
33	15832	Y	.	.	.	.	.	.	.	.	.	.	.				
34	15833	Y	.	.	.	.	.	.	.	.	.	.	.				
35	21803	Y	50.70	33.00	71.00	4...	.	3...	6...	38.00	.	29.00	1				

Identify the variable in which values are present that you want to recode.

In our case, we want to recode the values for Question One below.



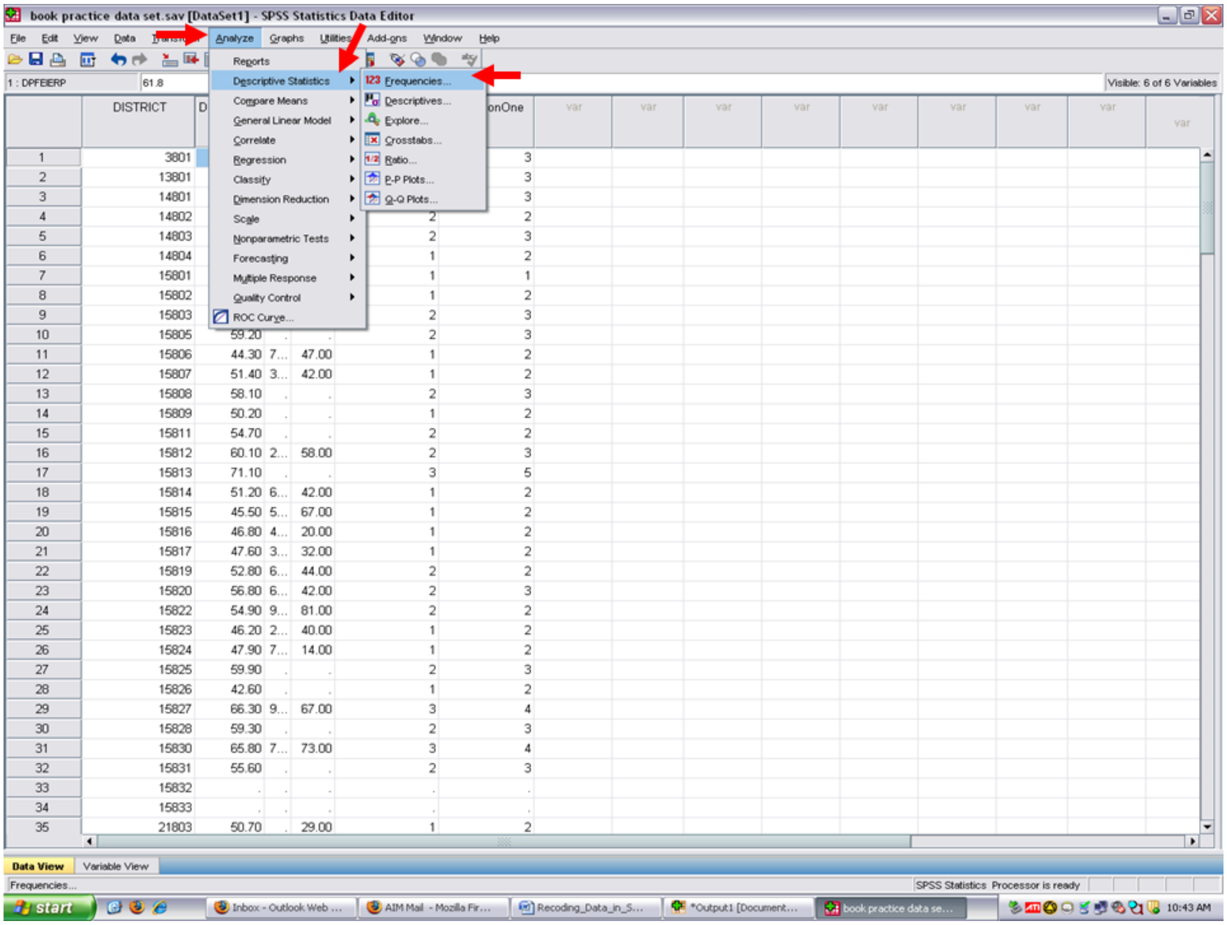
	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
1	3801	61.80	.	.	3	3
2	13801	59.20	.	.	2	3
3	14801	57.00	3...	29.00	2	3
4	14802	53.00	5...	.	2	2
5	14803	57.50	.	.	2	3
6	14804	50.60	5...	.	1	2
7	15801	36.00	3...	29.00	1	1
8	15802	49.40	2...	56.00	1	2
9	15803	58.10	.	.	2	3
10	15805	59.20	.	.	2	3
11	15806	44.30	7...	47.00	1	2
12	15807	51.40	3...	42.00	1	2
13	15808	58.10	.	.	2	3
14	15809	50.20	.	.	1	2
15	15811	54.70	.	.	2	2
16	15812	60.10	2...	58.00	2	3
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Identify the values within this variable that you wish to recode. You may need to run the frequencies procedure to list out all of the values present for the variable of interest.

√ Click on Analyze

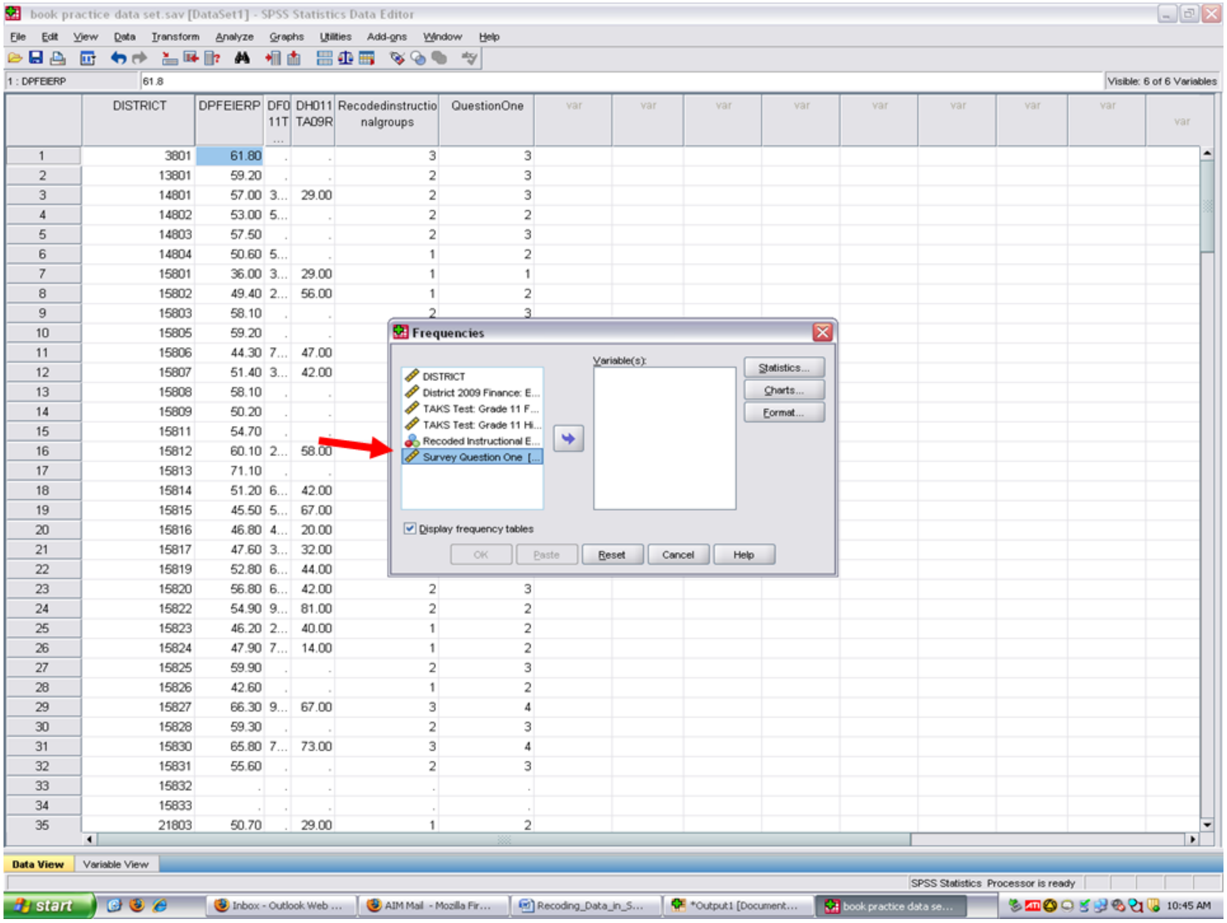
√ Click on Descriptive Statistics

√ Click on Frequencies



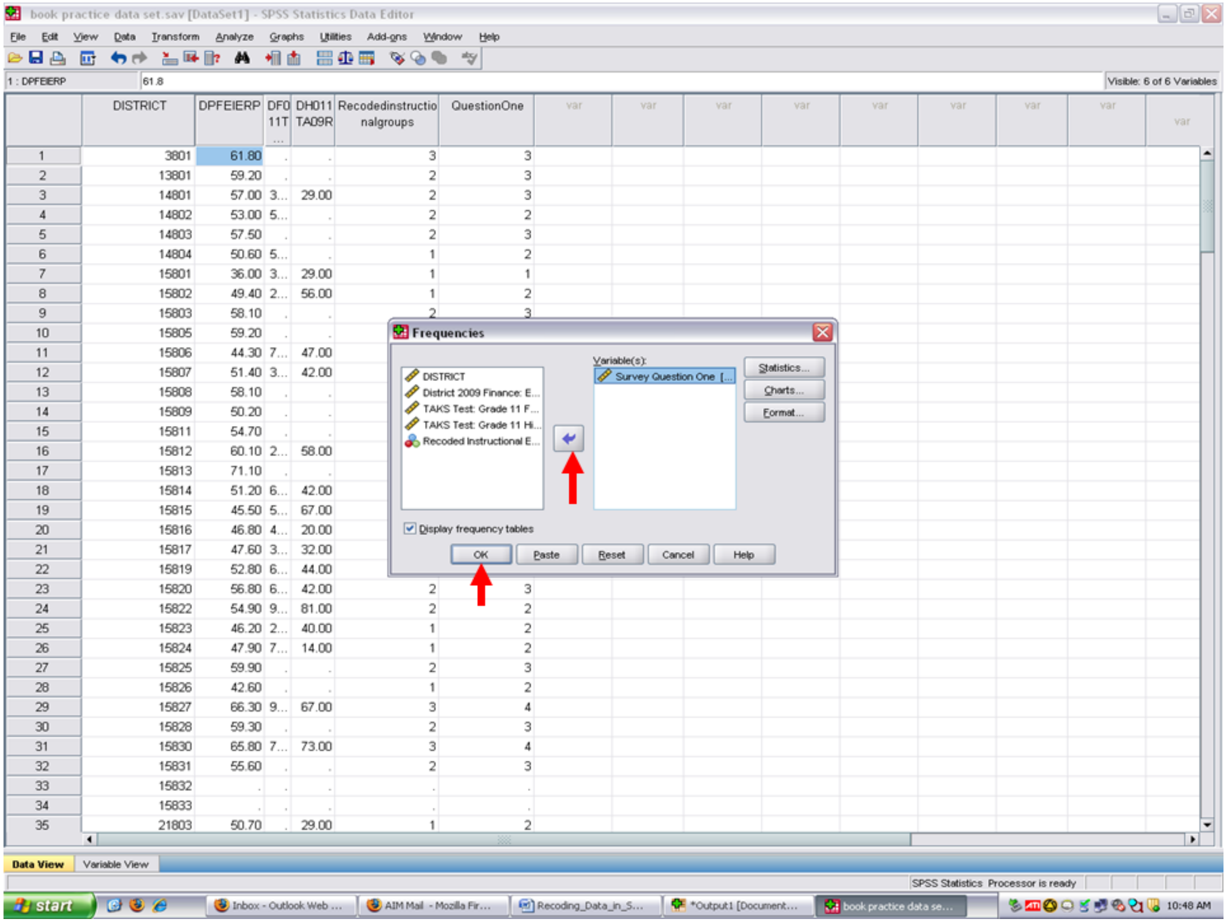
	DISTRICT	D				onOne
1	3801					3
2	13801					3
3	14801					3
4	14802				2	2
5	14803				2	3
6	14804				1	2
7	15801				1	1
8	15802				1	2
9	15803				2	3
10	15805	59.20	.	.	2	3
11	15806	44.30	7...	47.00	1	2
12	15807	51.40	3...	42.00	1	2
13	15808	58.10	.	.	2	3
14	15809	50.20	.	.	1	2
15	15811	54.70	.	.	2	2
16	15812	60.10	2...	58.00	2	3
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Highlight the variable on which you will request frequencies so that you can then determine the values that you will need to change/recode. In this example, we are using Survey Question One.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP 61.8
Visible: 6 of 6 Variables
Frequencies
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Survey Question One [...
Variable(s):
Statistics...
Charts...
Format...
☑ Display frequency tables
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
10:45 AM

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
1	3801	61.80	.	.	3	3
2	13801	59.20	.	.	2	3
3	14801	57.00	3...	29.00	2	3
4	14802	53.00	5...	.	2	2
5	14803	57.50	.	.	2	3
6	14804	50.60	5...	.	1	2
7	15801	36.00	3...	29.00	1	1
8	15802	49.40	2...	56.00	1	2
9	15803	58.10	.	.	2	3
10	15805	59.20	.	.		
11	15806	44.30	7...	47.00		
12	15807	51.40	3...	42.00		
13	15808	58.10	.	.		
14	15809	50.20	.	.		
15	15811	54.70	.	.		
16	15812	60.10	2...	58.00		
17	15813	71.10	.	.		
18	15814	51.20	6...	42.00		
19	15815	45.50	5...	67.00		
20	15816	46.80	4...	20.00		
21	15817	47.60	3...	32.00		
22	15819	52.80	6...	44.00		
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

√ Click on the arrow in the middle to send over the Survey Question One variable.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
61.8
Visible: 6 of 6 Variables
Frequencies
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Statistics...
Charts...
Format...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
10:48 AM

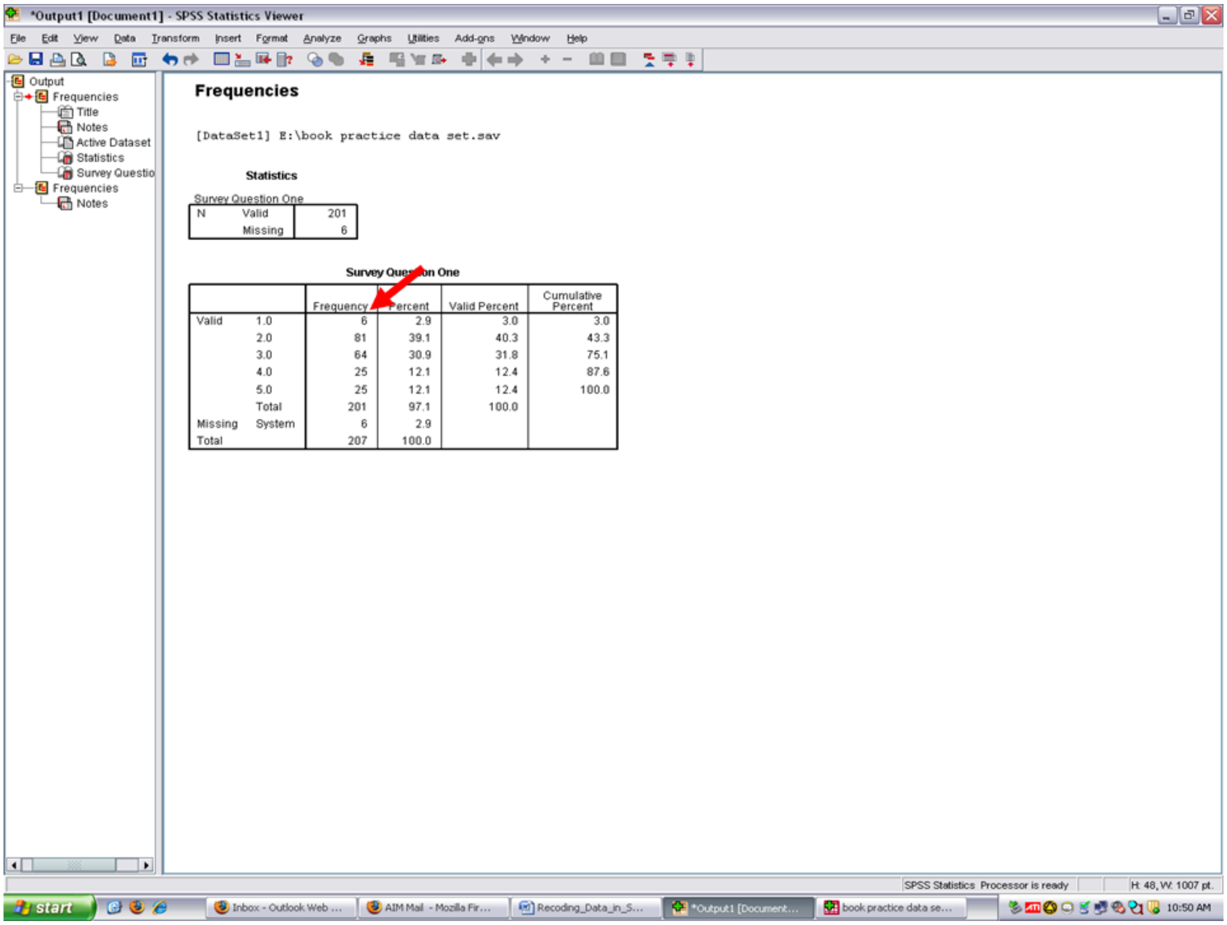
Variable(s): Survey Question One [...

☑ Display frequency tables

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
1	3801	61.80	.	.	3	3
2	13801	59.20	.	.	2	3
3	14801	57.00	3...	29.00	2	3
4	14802	53.00	5...	.	2	2
5	14803	57.50	.	.	2	3
6	14804	50.60	5...	.	1	2
7	15801	36.00	3...	29.00	1	1
8	15802	49.40	2...	56.00	1	2
9	15803	58.10	.	.	2	3
10	15805	59.20	.	.		
11	15806	44.30	7...	47.00		
12	15807	51.40	3...	42.00		
13	15808	58.10	.	.		
14	15809	50.20	.	.		
15	15811	54.70	.	.		
16	15812	60.10	2...	58.00		
17	15813	71.10	.	.		
18	15814	51.20	6...	42.00		
19	15815	45.50	5...	67.00		
20	15816	46.80	4...	20.00		
21	15817	47.60	3...	32.00		
22	15819	52.80	6...	44.00		
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Because we want a listing of the values present for this variable, Survey Question One, we will click on OK.

Go to the output screen. For this example, our output looks like the following. Survey Question One has five different values (i.e., 1, 2, 3, 4, 5). The value of 1 only occurred 6 times. These values could represent a 5-point Likert format of 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral/Undecided, 4 = Agree, and 5 = Strongly Agree. [Note. Readers are referred to a separate chapter on typing in survey data with appropriate labeling.]



Frequencies

[DataSet1] E:\book practice data set.sav

Statistics

Survey Question One

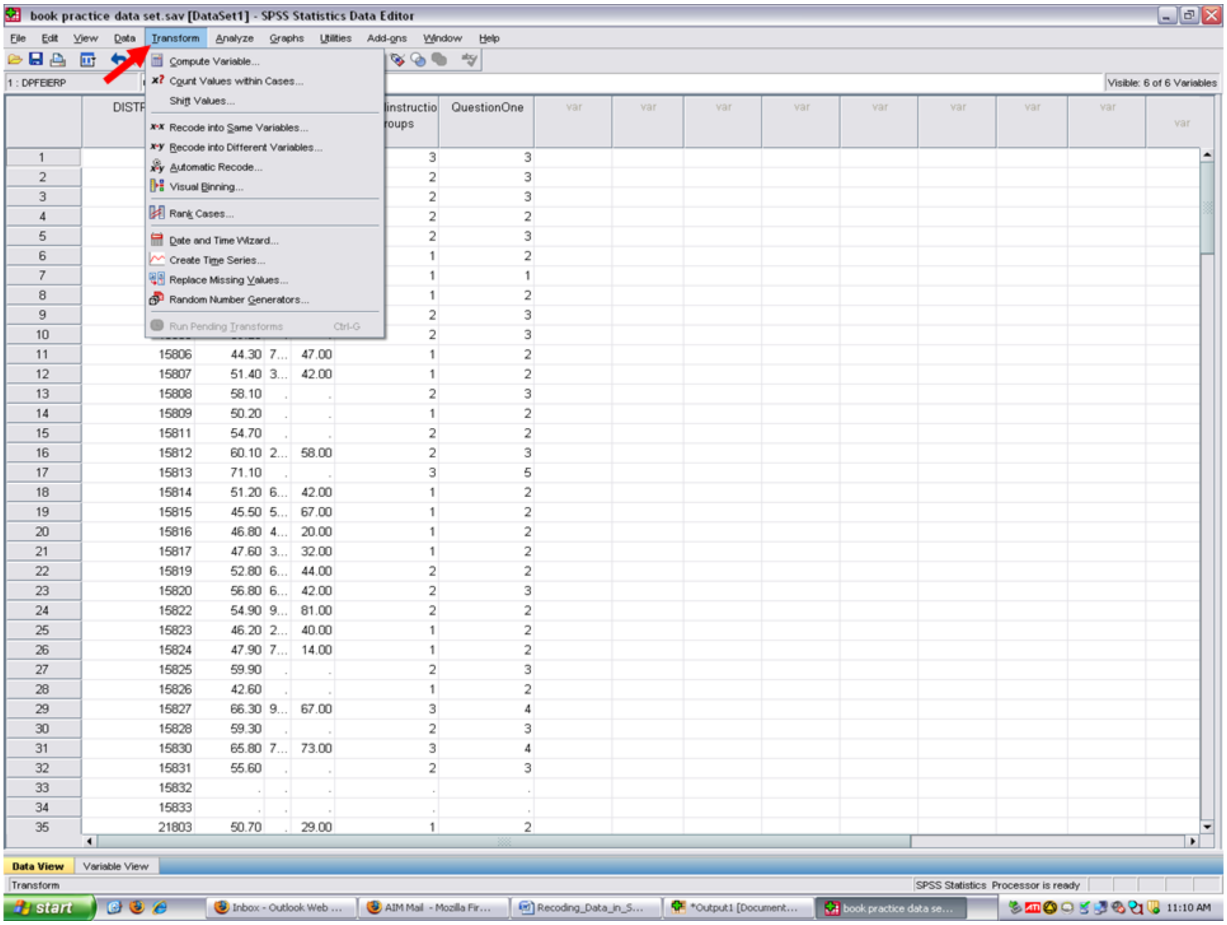
N	Valid	201
	Missing	6

Survey Question One

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.0	6	2.9	3.0	3.0
	2.0	81	39.1	40.3	43.3
	3.0	64	30.9	31.8	75.1
	4.0	25	12.1	12.4	87.6
	5.0	25	12.1	12.4	100.0
	Total	201	97.1	100.0	
Missing	System	6	2.9		
Total		207	100.0		

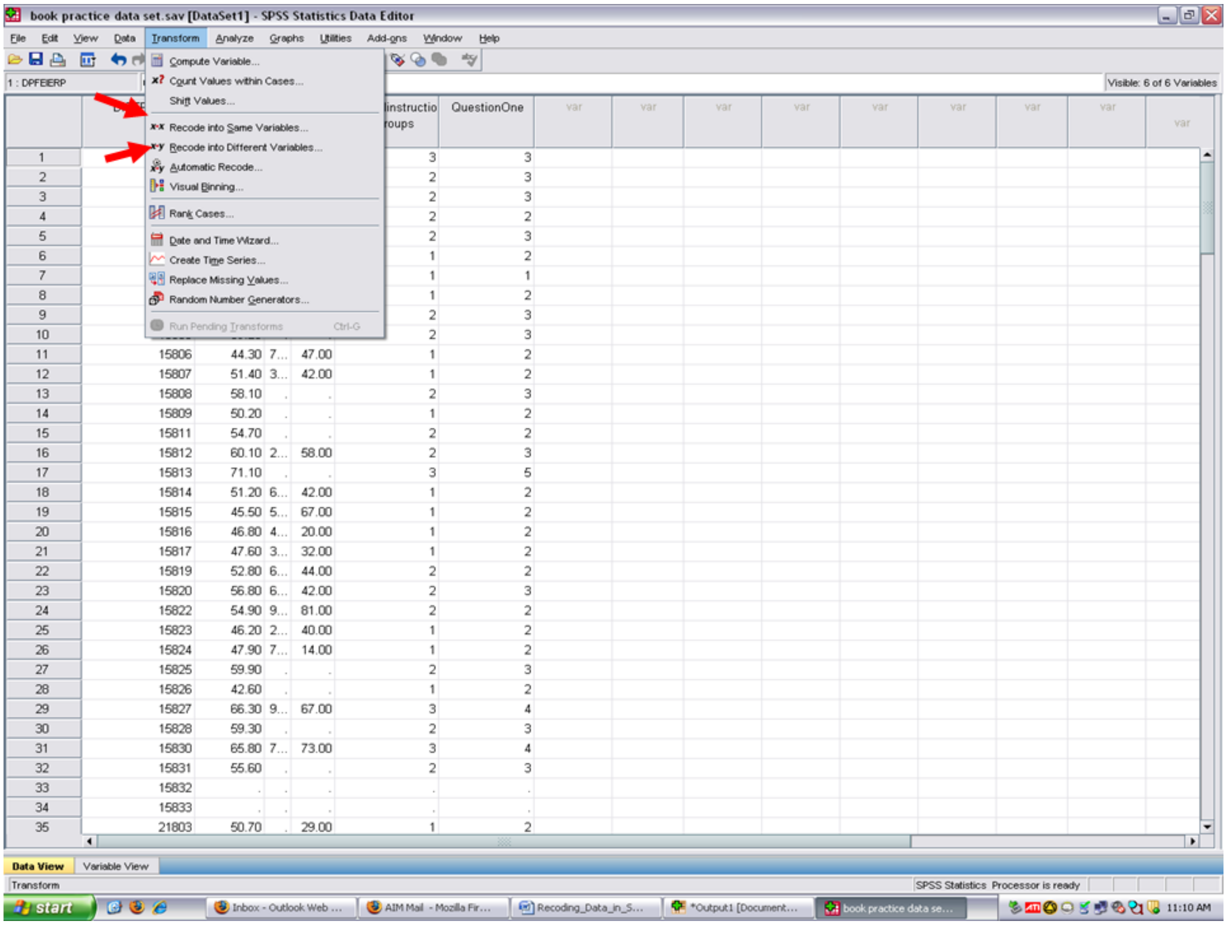
Based upon our frequencies, we will combine values 1 and 2 into a Disagreement category and 4 and 5 into an Agreement category.

√ Click on Transform.



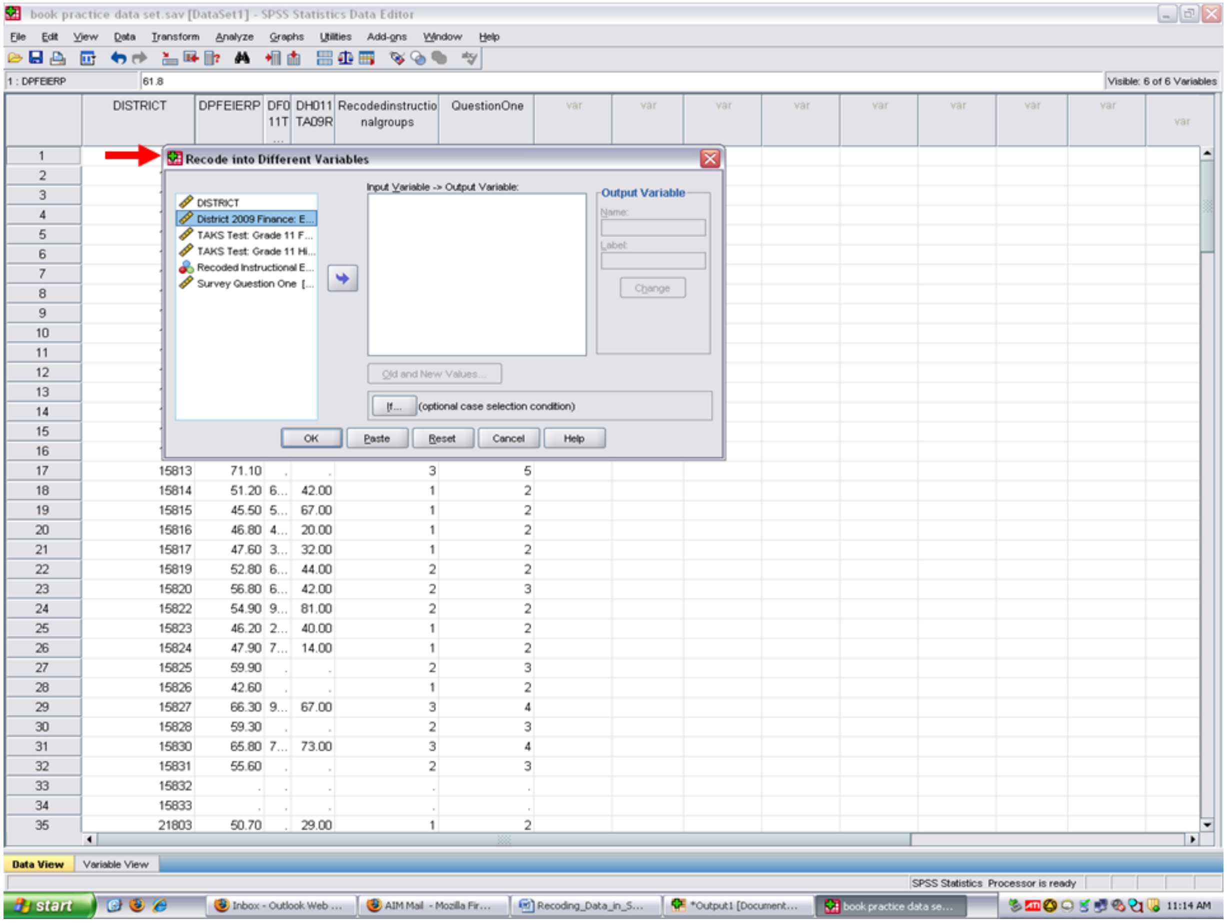
	DISTR				instructio roups	QuestionOne
1					3	3
2					2	3
3					2	3
4					2	2
5					2	3
6					1	2
7					1	1
8					1	2
9					2	3
10					2	3
11	15806	44.30	7...	47.00	1	2
12	15807	51.40	3...	42.00	1	2
13	15808	58.10	.	.	2	3
14	15809	50.20	.	.	1	2
15	15811	54.70	.	.	2	2
16	15812	60.10	2...	58.00	2	3
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

You now have an option to Recode Into Same Variables or Recode Into Different Variables. We recommend that you recode into different variables so that the data present in the variable of Question One is left untouched.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
Visible: 6 of 6 Variables
Compute Variable...
Count Values within Cases...
Shift Values...
Recode into Same Variables...
Recode into Different Variables...
Automatic Recode...
Visual Binning...
Rank Cases...
Date and Time Wizard...
Create Time Series...
Replace Missing Values...
Random Number Generators...
Run Pending Transforms Ctrl-G
var
Data View
Variable View
Transform
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:10 AM

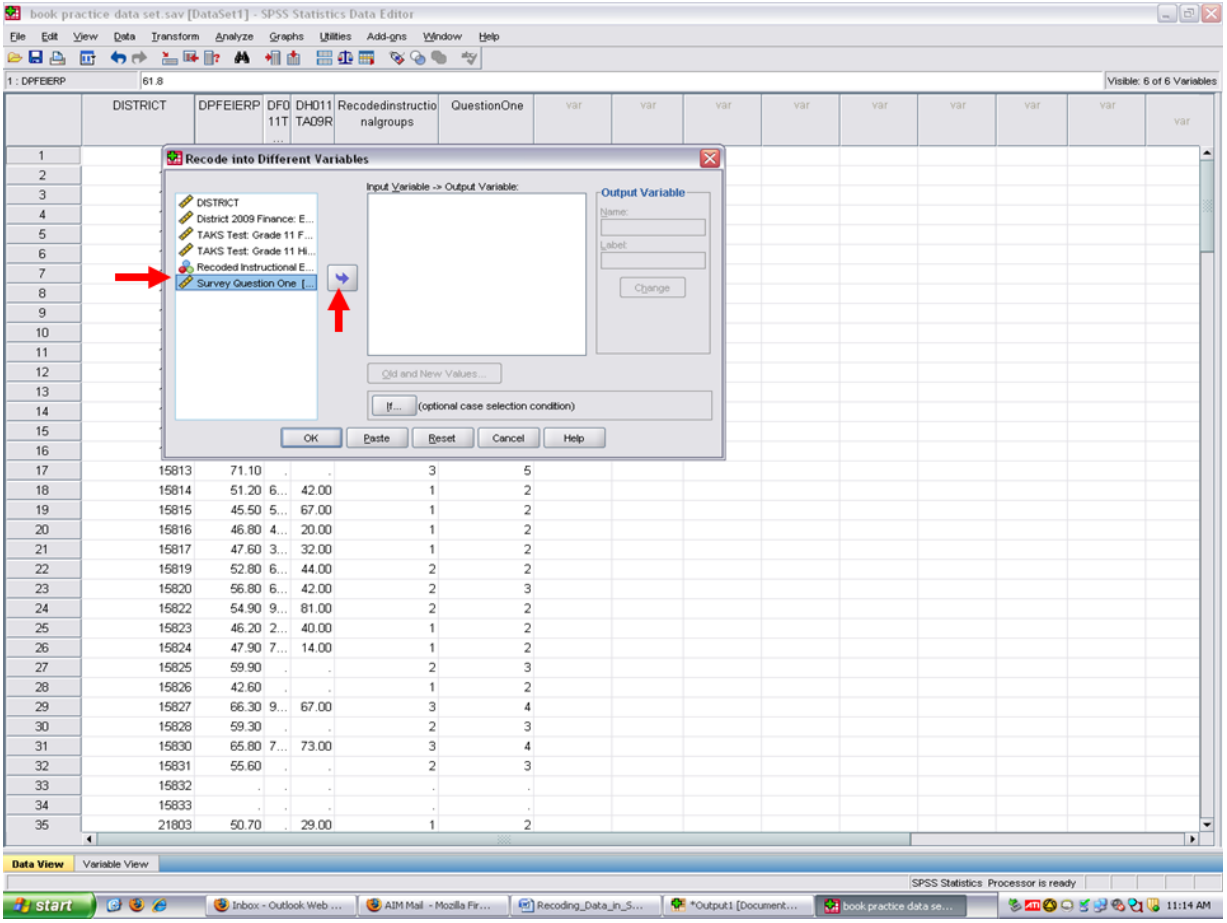
					instructio roups	QuestionOne
1					3	3
2					2	3
3					2	3
4					2	2
5					2	3
6					1	2
7					1	1
8					1	2
9					2	3
10					2	3
11	15806	44.30	7...	47.00	1	2
12	15807	51.40	3...	42.00	1	2
13	15808	58.10	.	.	2	3
14	15809	50.20	.	.	1	2
15	15811	54.70	.	.	2	2
16	15812	60.10	2...	58.00	2	3
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

When you click on Recode Into Different Variables, you will then see this screen.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
61.8
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Survey Question One [...
Input Variable -> Output Variable:
Output Variable
Name:
Label:
Change
Old and New Values...
If... (optional case selection condition)
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:14 AM

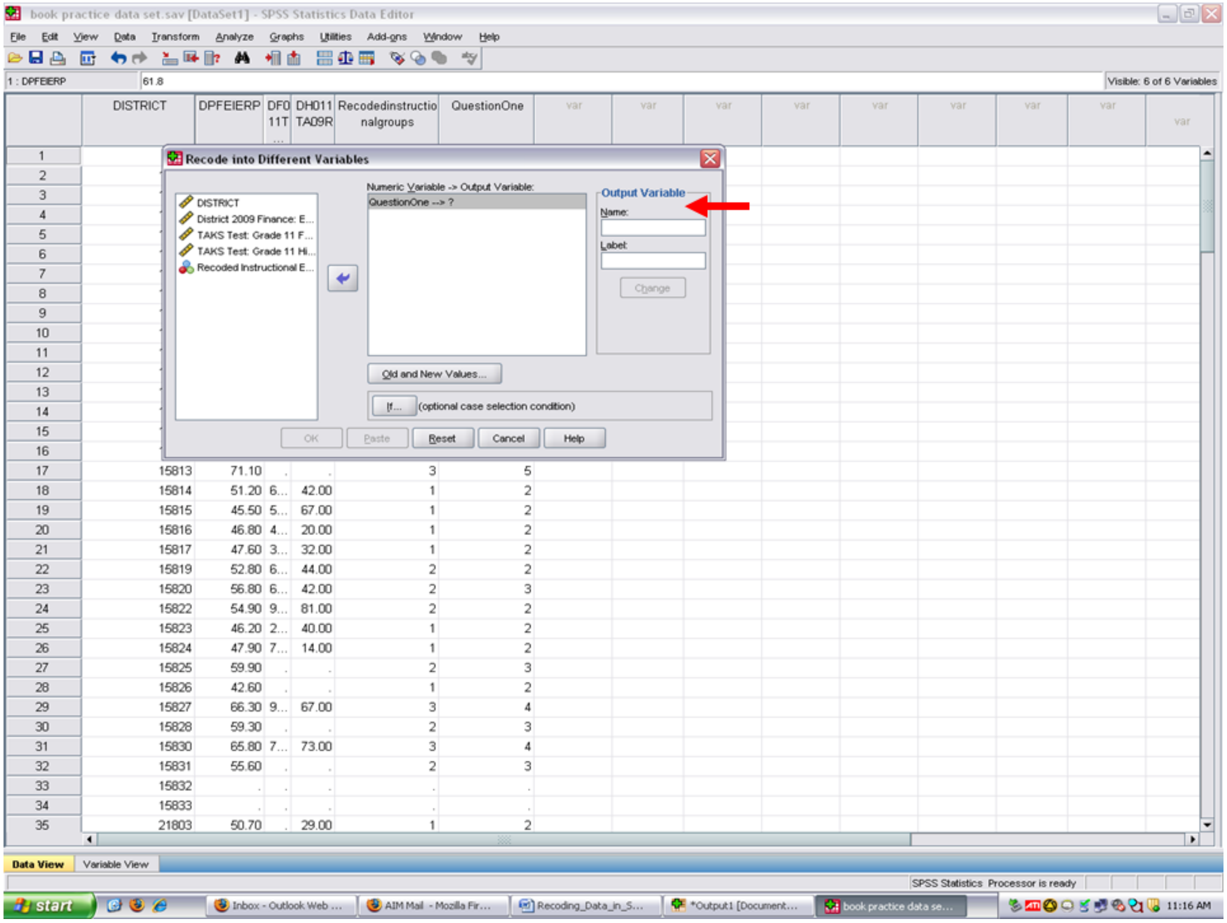
	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Highlight the variable on which you will be recoding the values. In this example, our variable is Survey Question One. After highlighting it, click on the arrow to send it to the Input Variable – Output Variable box.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP 61.8
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Survey Question One [...
Input Variable -> Output Variable:
Output Variable
Name:
Label:
Change
Old and New Values...
If... (optional case selection condition)
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:14 AM

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click under the Output Variable where Name is present.

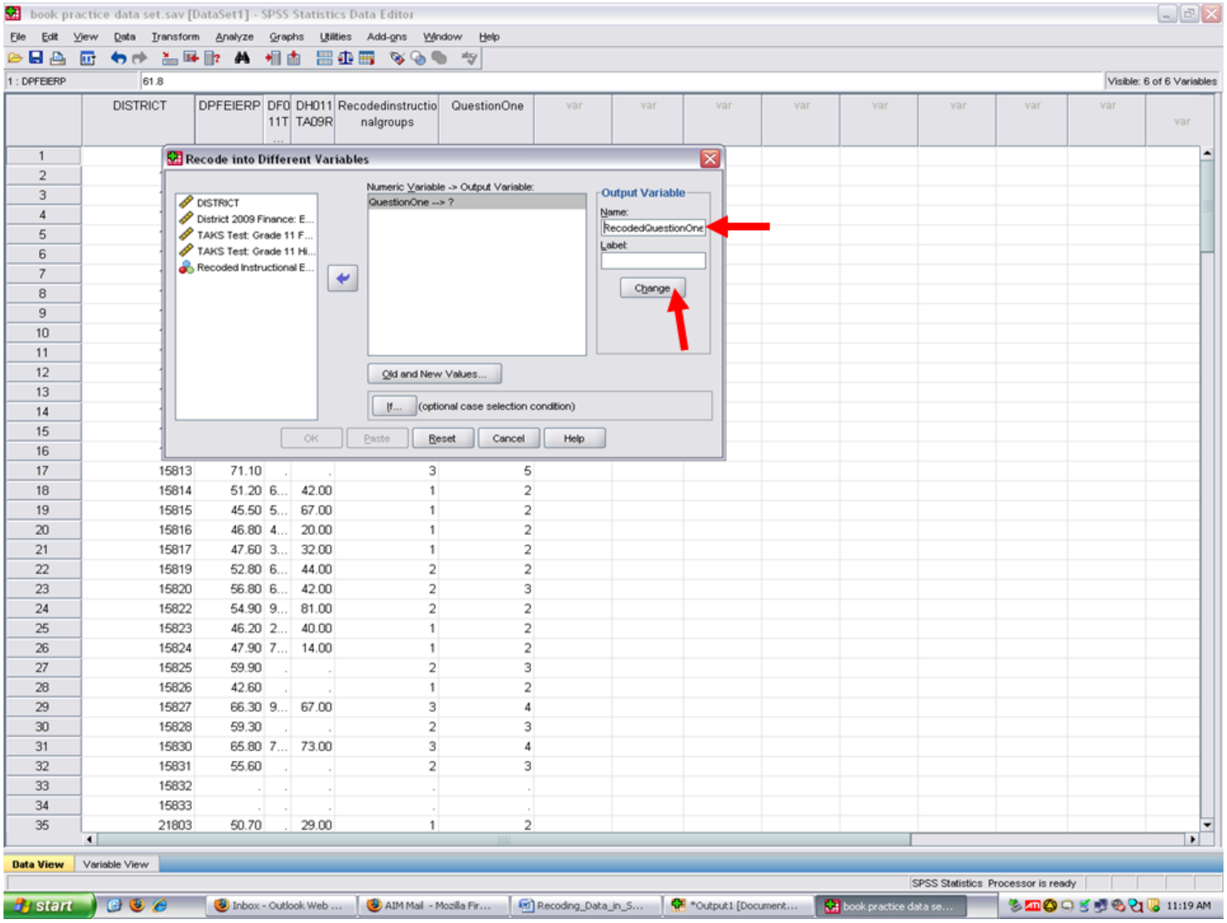

book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP 61.8
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Output Variable
Name:
Label:
Change
Old and New Values...
If... (optional case selection condition)
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:16 AM

Numeric Variable -> Output Variable:
QuestionOne --> ?

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Now type in a new name for the variable you will be creating. Remember that the information in Survey Question One is being recoded from 5 separate values into 3 values. We encourage you to type Recoded in front of the new variable name.

The name, RecodedQuestionOne, will be the name of our new variable. After typing in the name, click on Change.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Output Variable
Change
Old and New Values...
If...
(optional case selection condition)
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:19 AM

1 : DPFEIERP 61.8

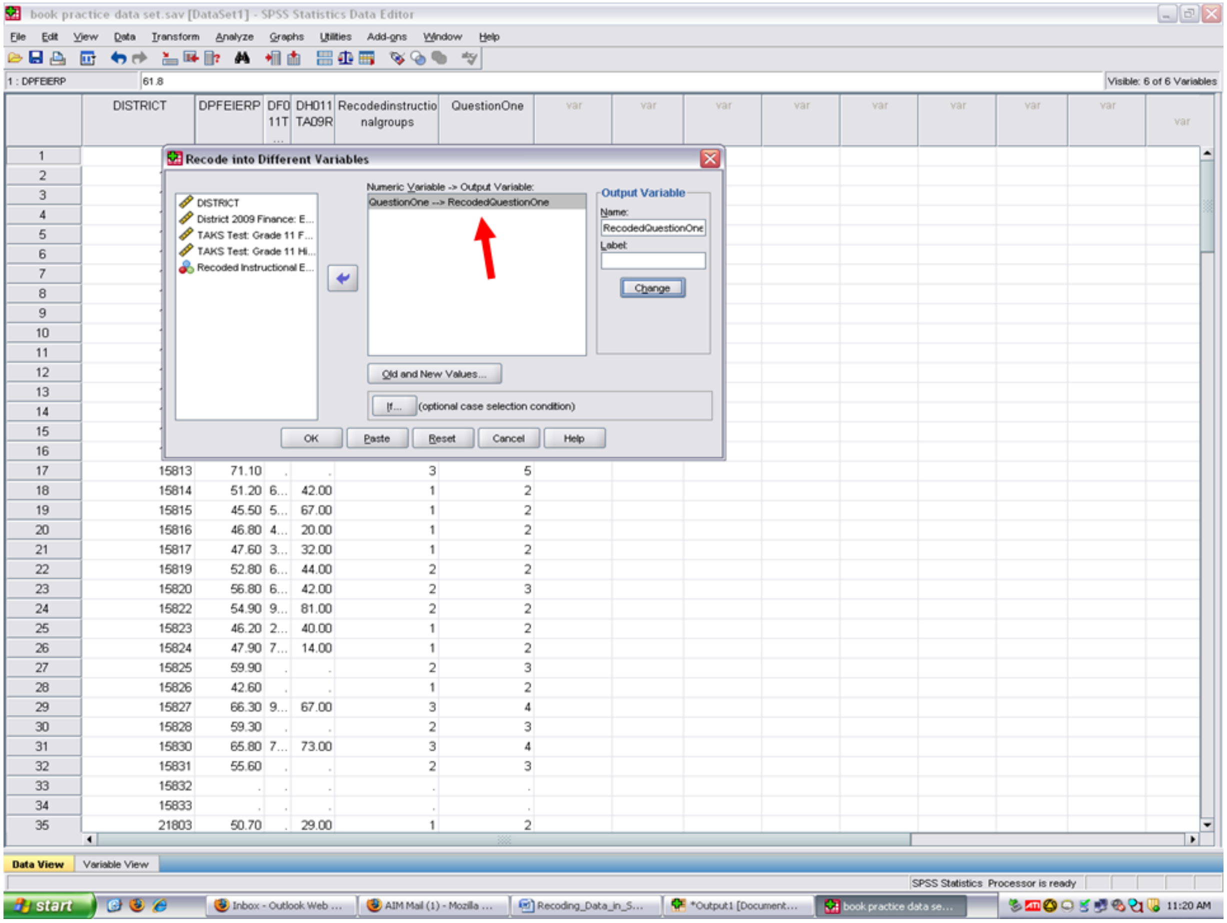
Numeric Variable -> Output Variable:
QuestionOne --> ?

Name: RecodedQuestionOne

Label:

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

After clicking on Change, the name for the new variable that is being created appears in the Numeric Variable – Output Variable box.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Old and New Values...
If...
(optional case selection condition)
OK
Paste
Reset
Cancel
Help
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail (1) - Mozilla ...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:20 AM

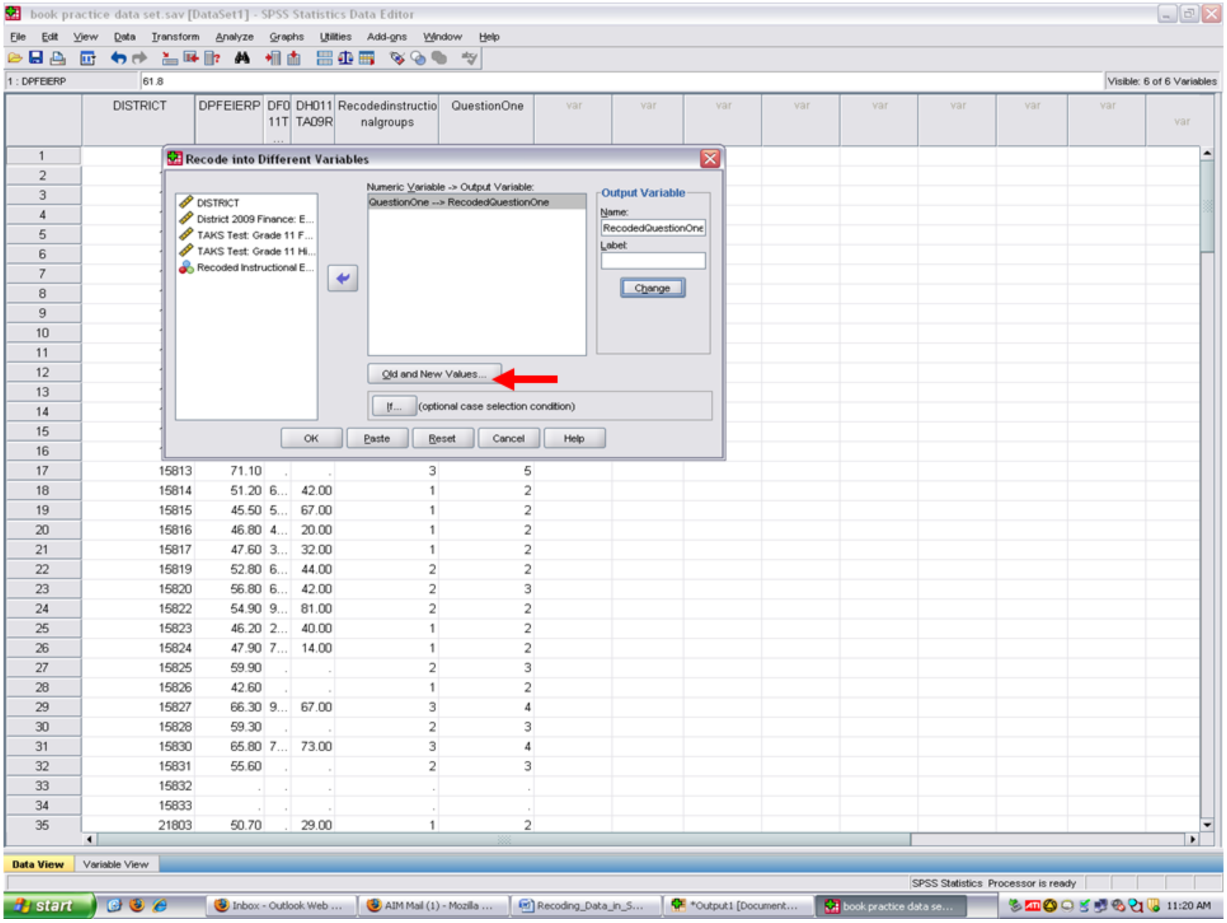
1 : DPFEIERP 61.8

Numeric Variable -> Output Variable:
QuestionOne --> RecodedQuestionOne

Output Variable
Name: RecodedQuestionOne
Label:

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Now click on Old and New Values. This is where the values will be recoded.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Recode into Different Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Old and New Values...
If...
(optional case selection condition)
OK
Paste
Reset
Cancel
Help
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
11:20 AM

1 : DPFEIERP 61.8

Numeric Variable -> Output Variable: QuestionOne --> RecodedQuestionOne

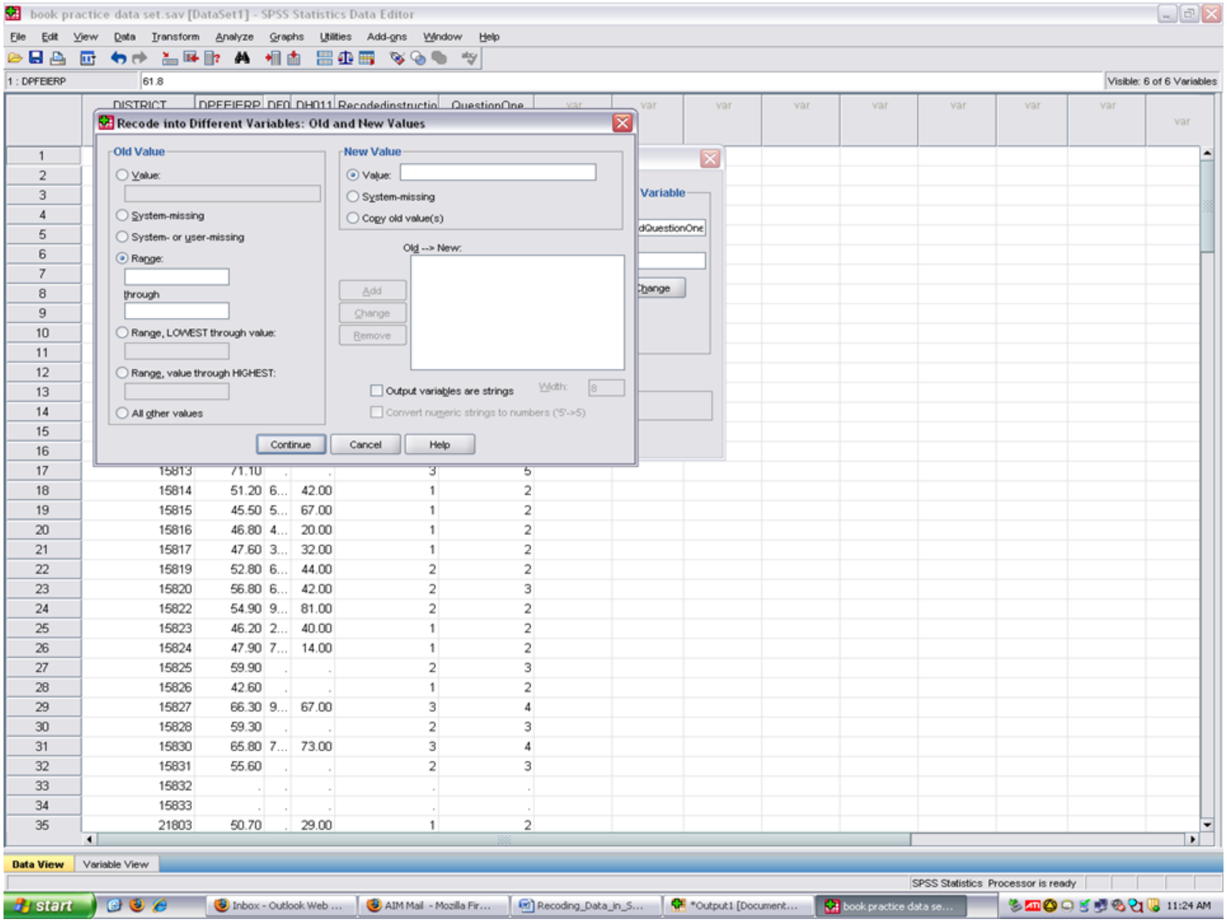
Output Variable

Name: RecodedQuestionOne

Label:

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

This screen will then appear.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Recode into Different Variables: Old and New Values
Add
Change
Remove
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready

1 : DPFEIERP 61.8

Visible: 6 of 6 Variables

Old Value

○ Value:

○ System-missing

○ System- or user-missing

● Range:

through

○ Range, LOWEST through value:

○ Range, value through HIGHEST:

○ All other values

New Value

● Value:

○ System-missing

○ Copy old value(s)

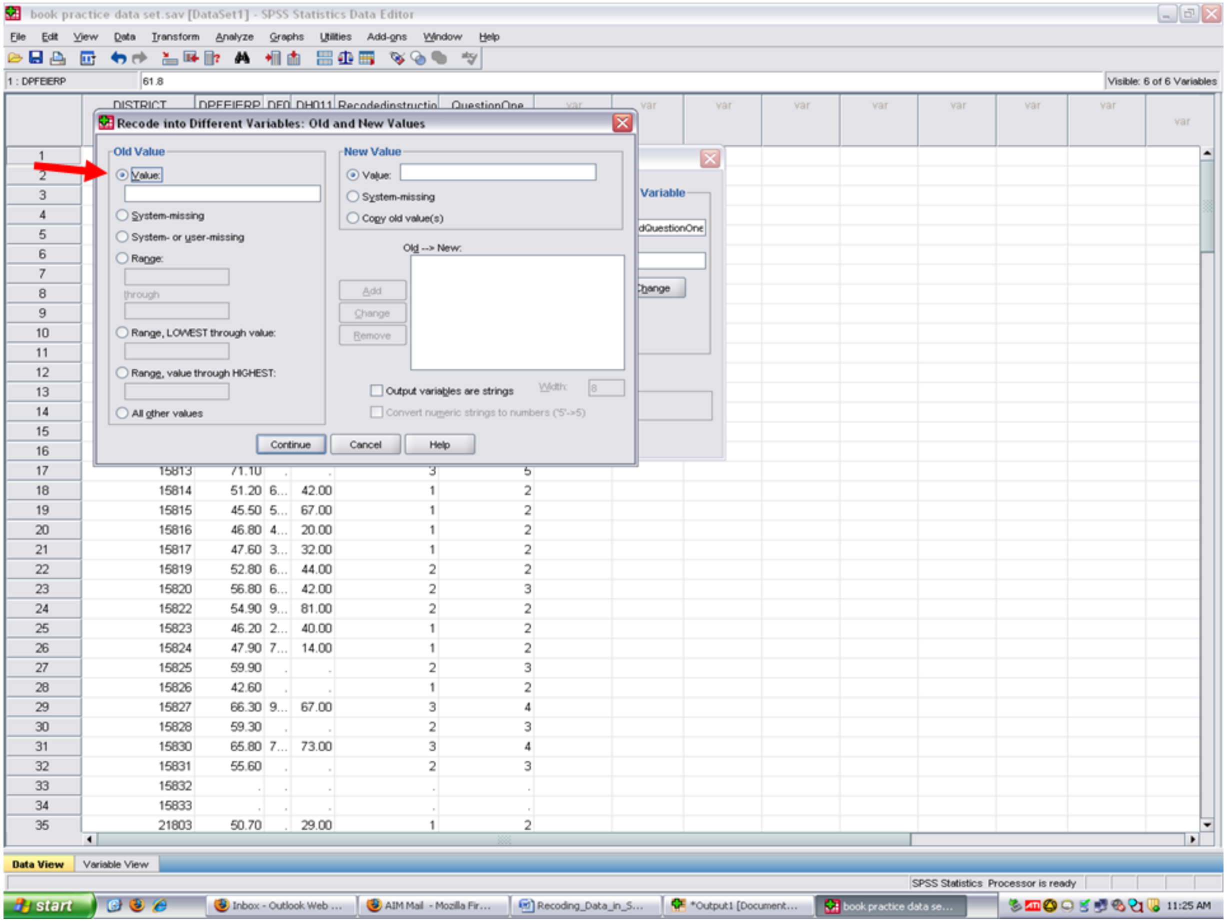
Old --> New:

☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'->5)

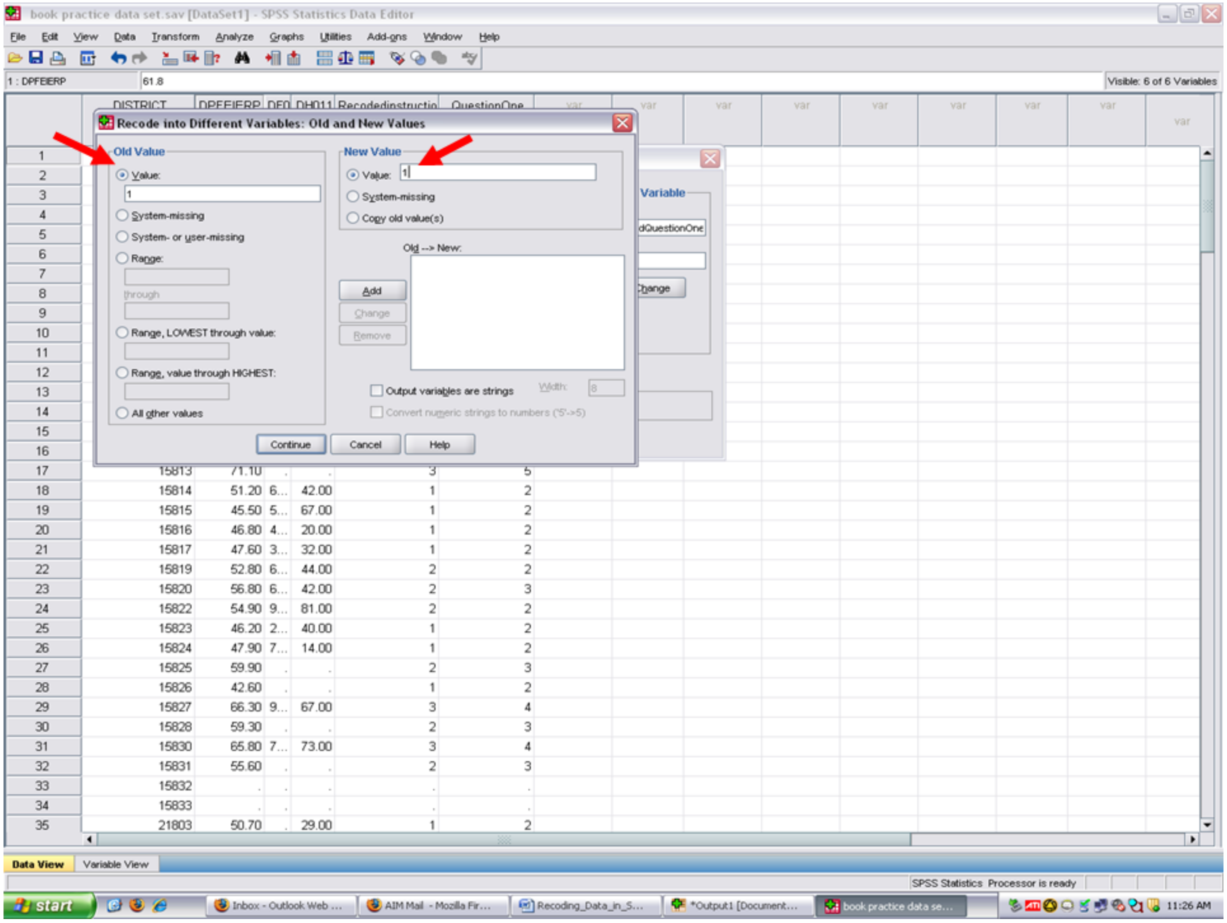
	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on Old Value and the rectangle underneath it becomes activated.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP 61.8
Visible: 6 of 6 Variables
Recode into Different Variables: Old and New Values
Old Value
Value:
System-missing
System- or user-missing
Range:
through
Range, LOWEST through value:
Range, value through HIGHEST:
All other values
New Value
Value:
System-missing
Copy old value(s)
Old --> New:
Add
Change
Remove
Output variables are strings
Width: 8
Convert numeric strings to numbers ('5'->5)
Continue
Cancel
Help
Variable
dQuestionOne
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:25 AM

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Now we will begin recoding the values for this variable. Type a 1 in the Old Value box and a 1 in the New Value box.



1 : DPFEIERP 61.8

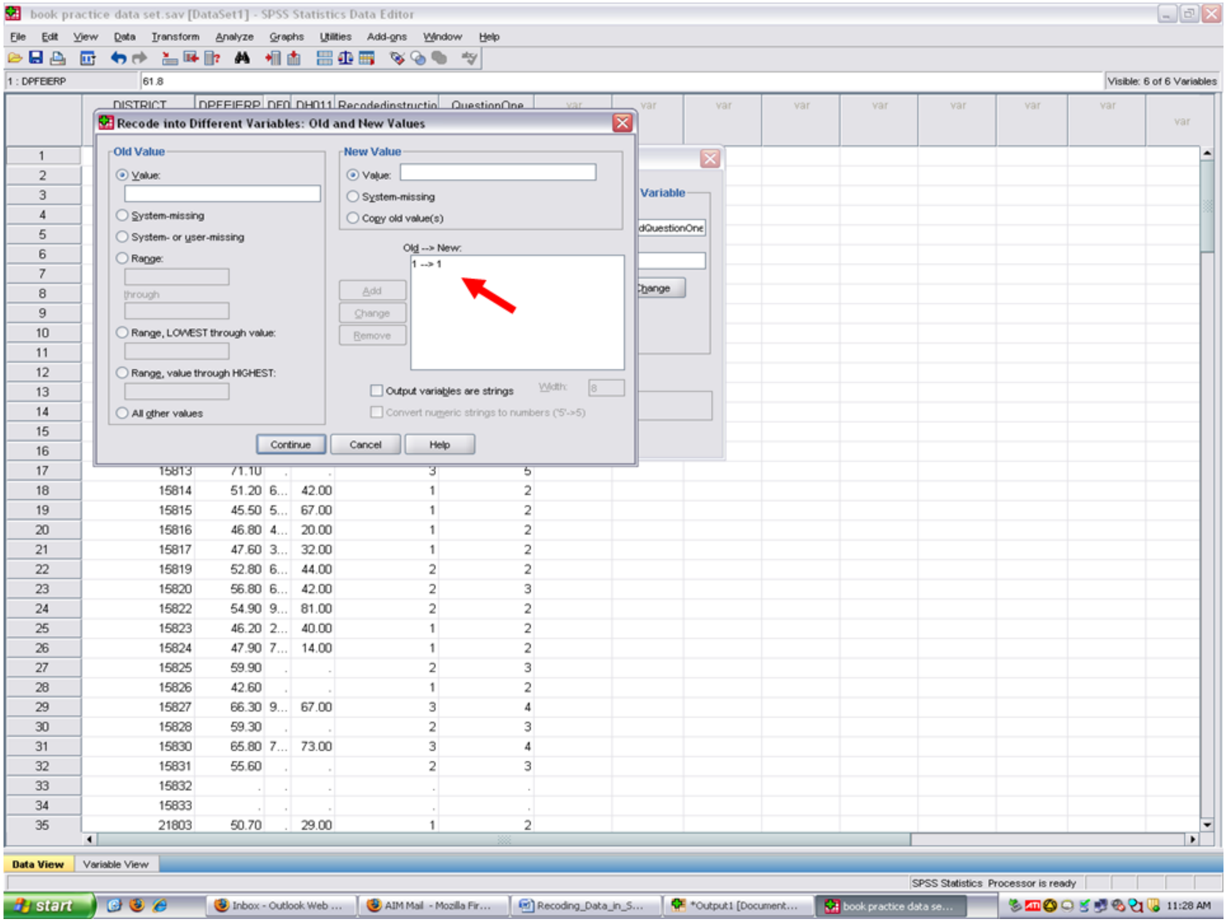
Old Value: ● Value: 1

New Value: ● Value: 1

Width: 8

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on Add. This then moves the 1 in the Old Value and 1 in the New Value into the larger box.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Recode into Different Variables: Old and New Values
Old Value
System-missing
System- or user-missing
Range:
through
Range, LOWEST through value:
Range, value through HIGHEST:
All other values
New Value
System-missing
Copy old value(s)
Add
Change
Remove
Continue
Cancel
Help
Variable
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:28 AM

1 : DPFEIERP 61.8

Old Value: ● Value:

New Value: ● Value:

Old --> New:
1 --> 1

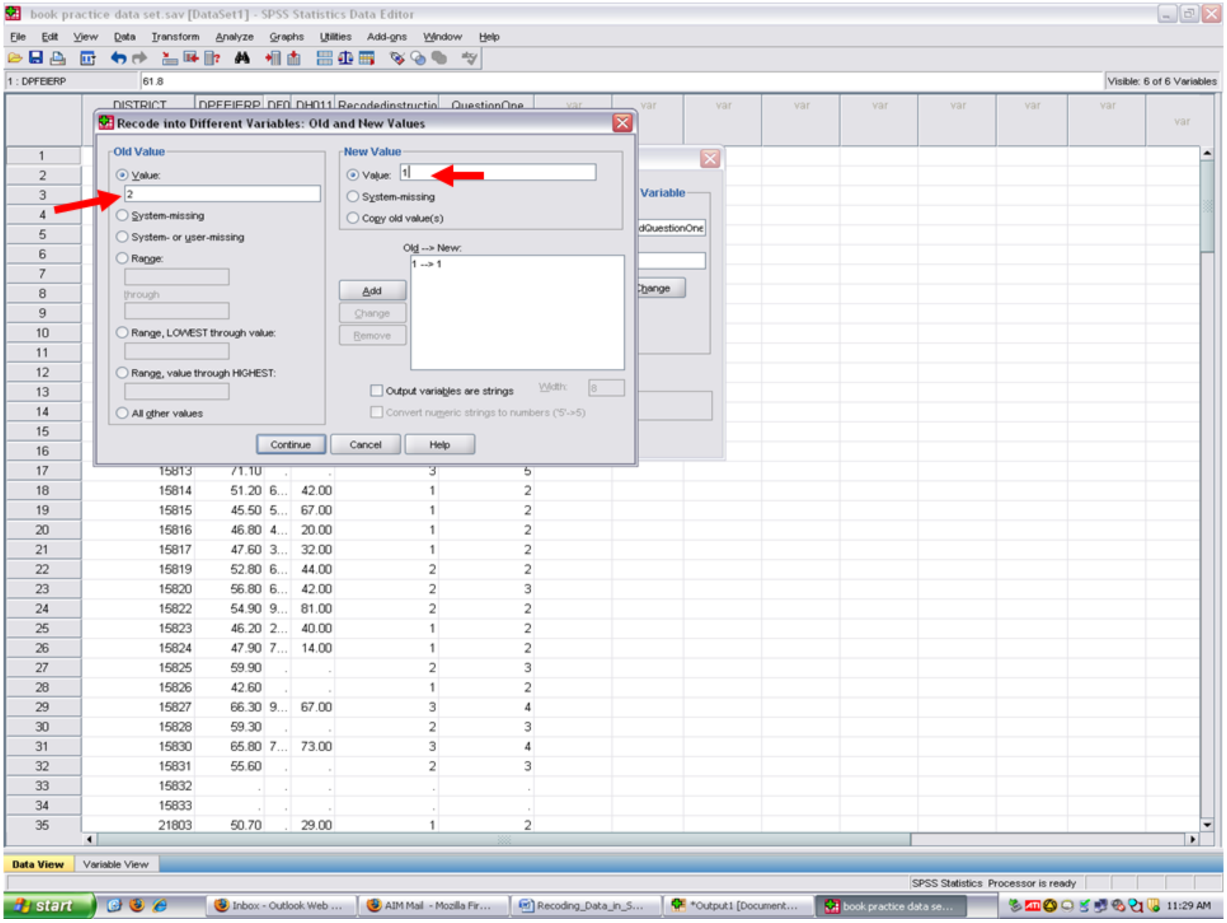
☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'->5)

dQuestionOne

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Now type a 2 in Old Value and a 1 in New Value. When this process is completed, SPSS will merge all values of a 1 and all values of a 2 into a 1 category.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Recode into Different Variables: Old and New Values
Old Value
System-missing
System- or user-missing
Range:
through
Range, LOWEST through value:
Range, value through HIGHEST:
All other values
New Value
System-missing
Copy old value(s)
Add
Change
Remove
Output variables are strings
Width:
Convert numeric strings to numbers ('5'->5)
Continue
Cancel
Help
Variable
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:29 AM

1 : DPFEIERP 61.8

Old Value: ● Value: 2

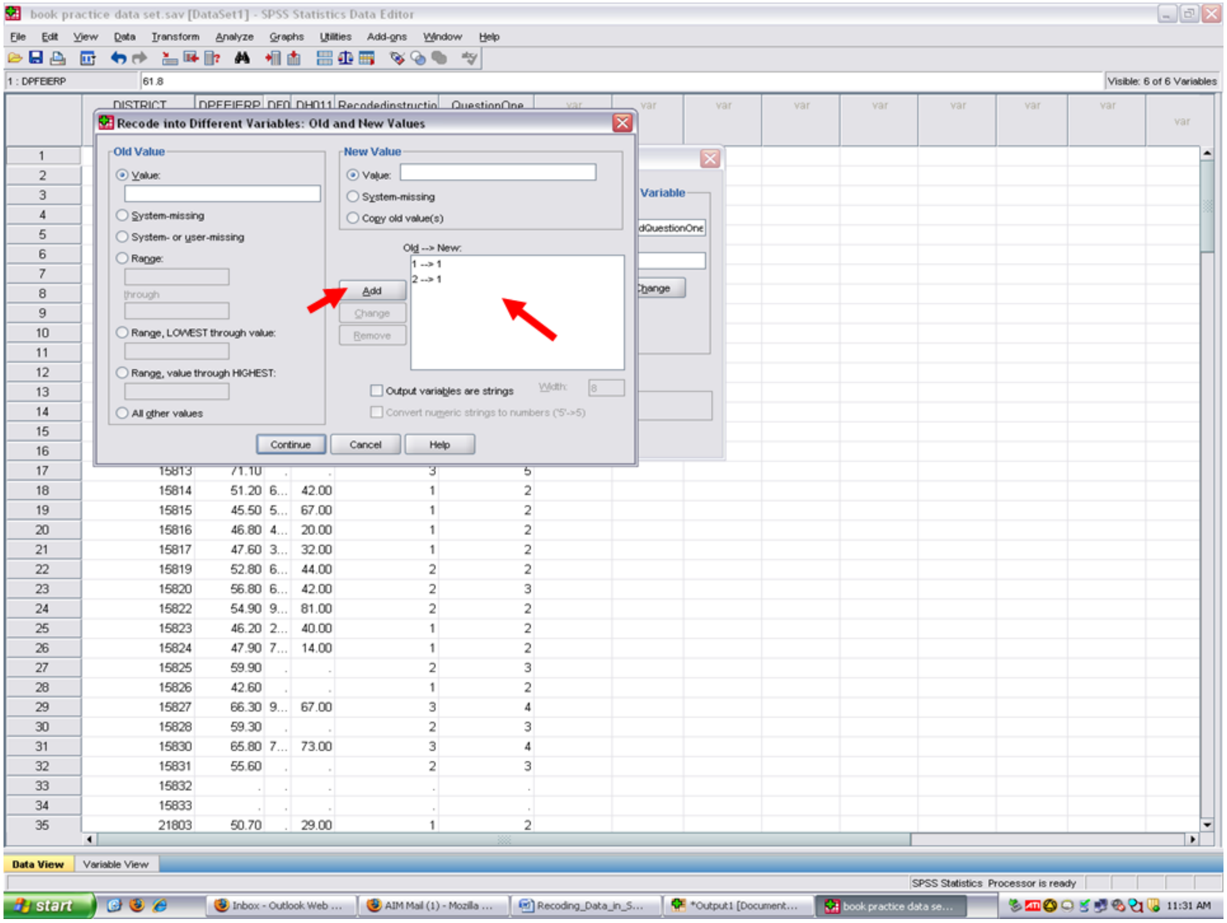
New Value: ● Value: 1

Old --> New:
1 --> 1

Width: 8

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on Add. The Old Value of 2 and the New Value of 1 now appear in the larger box.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP 61.8
Visible: 6 of 6 Variables
Recode into Different Variables: Old and New Values
Old Value
New Value
Add
Change
Remove
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
11:31 AM

Old Value: ● Value: ○ System-missing ○ System- or user-missing ○ Range: through ○ Range, LOWEST through value: ○ Range, value through HIGHEST: ○ All other values

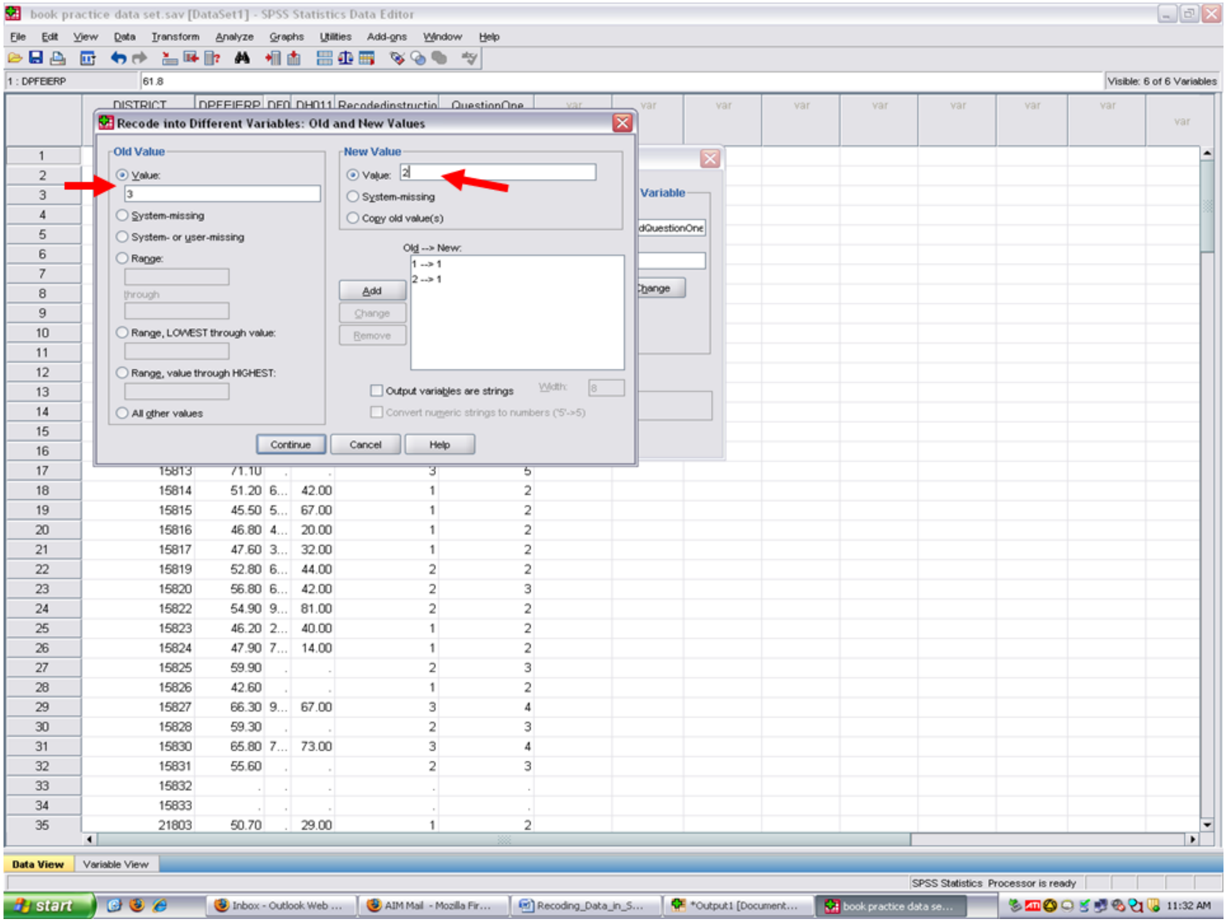
New Value: ● Value: ○ System-missing ○ Copy old value(s)

Old --> New:
1 --> 1
2 --> 1

☐ Output variables are strings Width: 8
☐ Convert numeric strings to numbers ('5'->5)

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Type a 3 in Old Value and a 2 in New Value.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Recode into Different Variables: Old and New Values
Old Value
System-missing
System- or user-missing
Range:
through
Range, LOWEST through value:
Range, value through HIGHEST:
All other values
New Value
System-missing
Copy old value(s)
Add
Change
Remove
Output variables are strings
Width:
Convert numeric strings to numbers ('5'->5)
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
11:32 AM

1 : DPFEIERP 61.8

Visible: 6 of 6 Variables

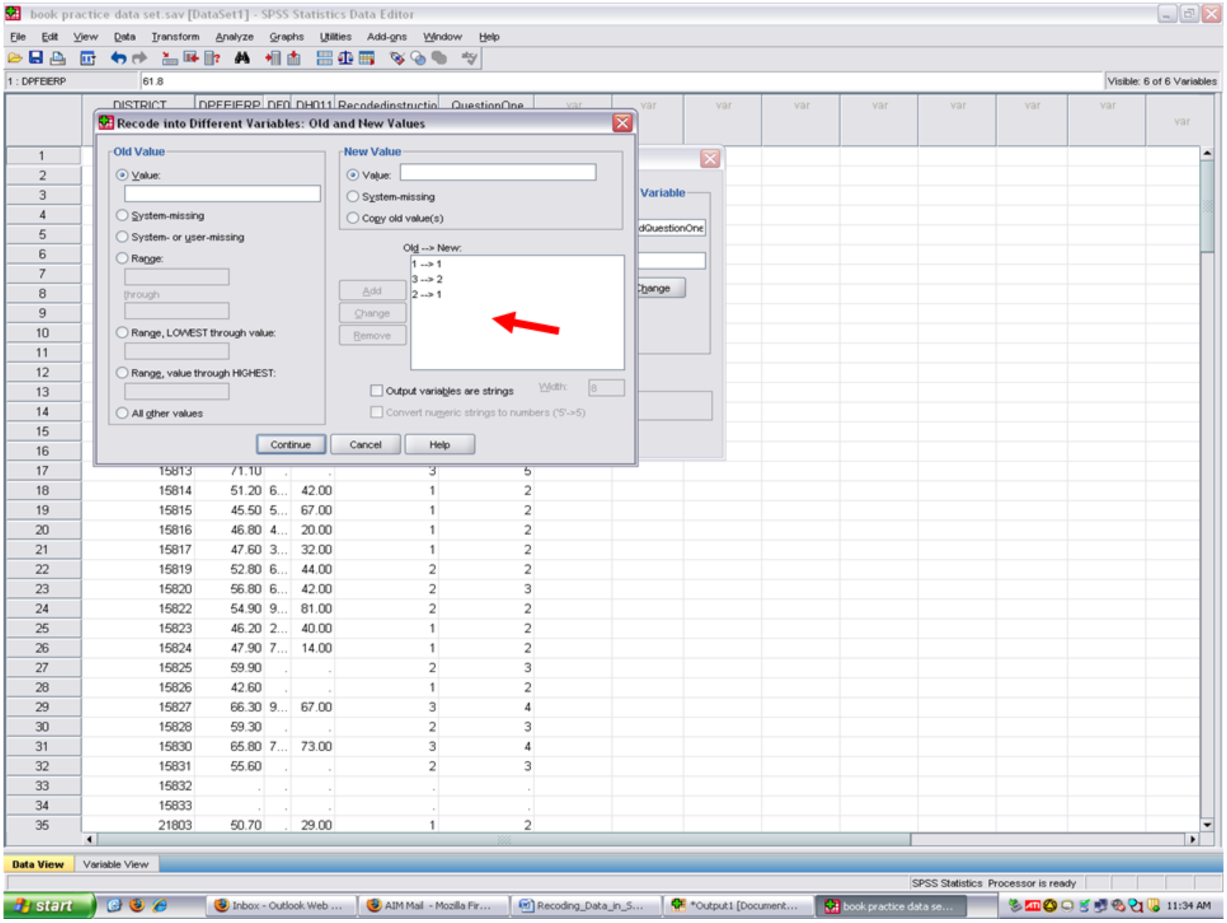
Old Value: ● Value: 3

New Value: ● Value: 2

Old --> New:
1 --> 1
2 --> 1

	DISTRICT	DPFEIERP	DFQ	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on Add. The Old Value of 3 and the New Value of 2 have been added into the larger box.



book practice data set.sav [DataSet1] - SPSS Statistics Data Editor

1 : DPFEIERP 61.8

Visible: 6 of 6 Variables

Recode into Different Variables: Old and New Values

Old Value: ● Value:

New Value: ● Value:

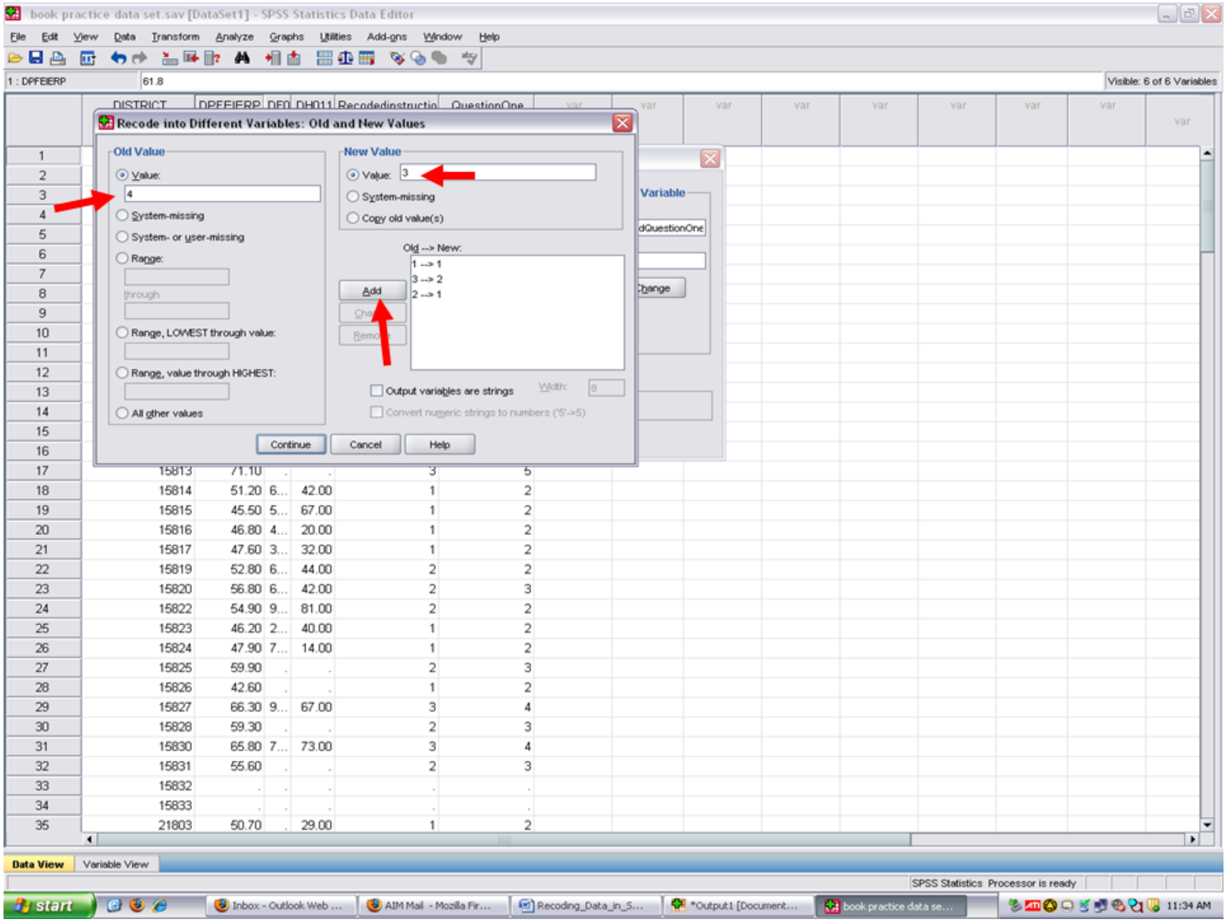
Old --> New:
1 --> 1
3 --> 2
2 --> 1

☐ Output variables are strings Width: 8
☐ Convert numeric strings to numbers ('5'->5)

	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

SPSS Statistics Processor is ready

Type a 4 in Old Value and a 3 in New Value. Then click on Add



1 : DPFEIERP 61.8

Recode into Different Variables: Old and New Values

Old Value

● Value: 4

○ System-missing

○ System- or user-missing

○ Range:

through

○ Range, LOWEST through value:

○ Range, value through HIGHEST:

○ All other values

New Value

● Value: 3

○ System-missing

○ Copy old value(s)

Old --> New:

1 --> 1
3 --> 2
2 --> 1

Add Change Remove

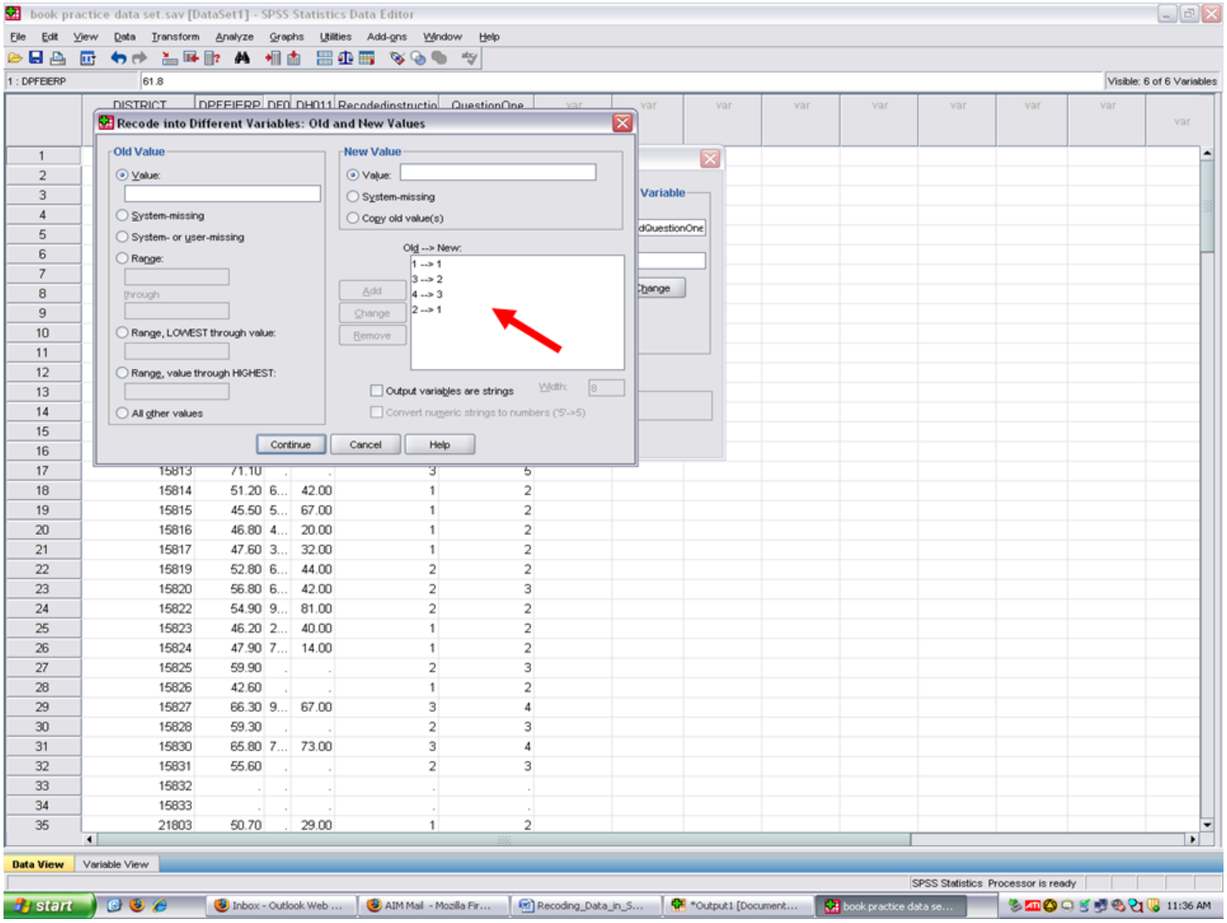
☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'->5)

Continue Cancel Help

	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

The Old Value of 4 and the New Value of 3 have now been added to the larger box.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
Visible: 6 of 6 Variables
Recode into Different Variables: Old and New Values
Old Value
Value:
System-missing
System- or user-missing
Range:
through
Range, LOWEST through value:
Range, value through HIGHEST:
All other values
New Value
Value:
System-missing
Copy old value(s)
Old --> New:
Add
Change
Remove
Output variables are strings
Width:
Convert numeric strings to numbers ('5'->5)
Continue
Cancel
Help
Variable
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:36 AM

1 : DPFEIERP 61.8

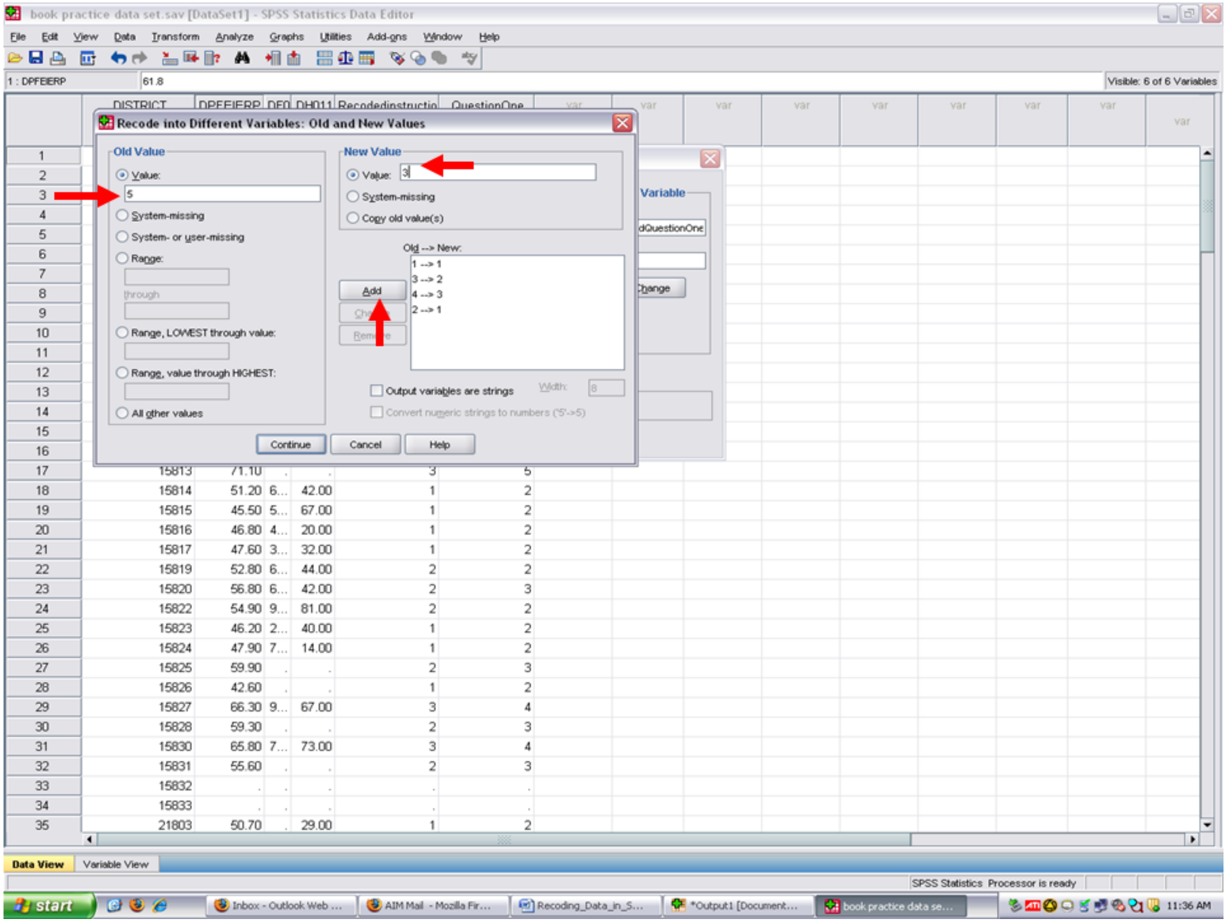
Old --> New:
1 --> 1
3 --> 2
4 --> 3
2 --> 1

○ Value: ☐ Output variables are strings Width: 8

dQuestionOne

	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Finally, type 5 in the Old Value box and 3 into the New Value box. Click on Add


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 6 of 6 Variables
Add
Change
Remove
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
11:36 AM

1 : DPFEIERP 61.8

Recode into Different Variables: Old and New Values

Old Value
● Value: 5
○ System-missing
○ System- or user-missing
○ Range:
through
○ Range, LOWEST through value:
○ Range, value through HIGHEST:
○ All other values

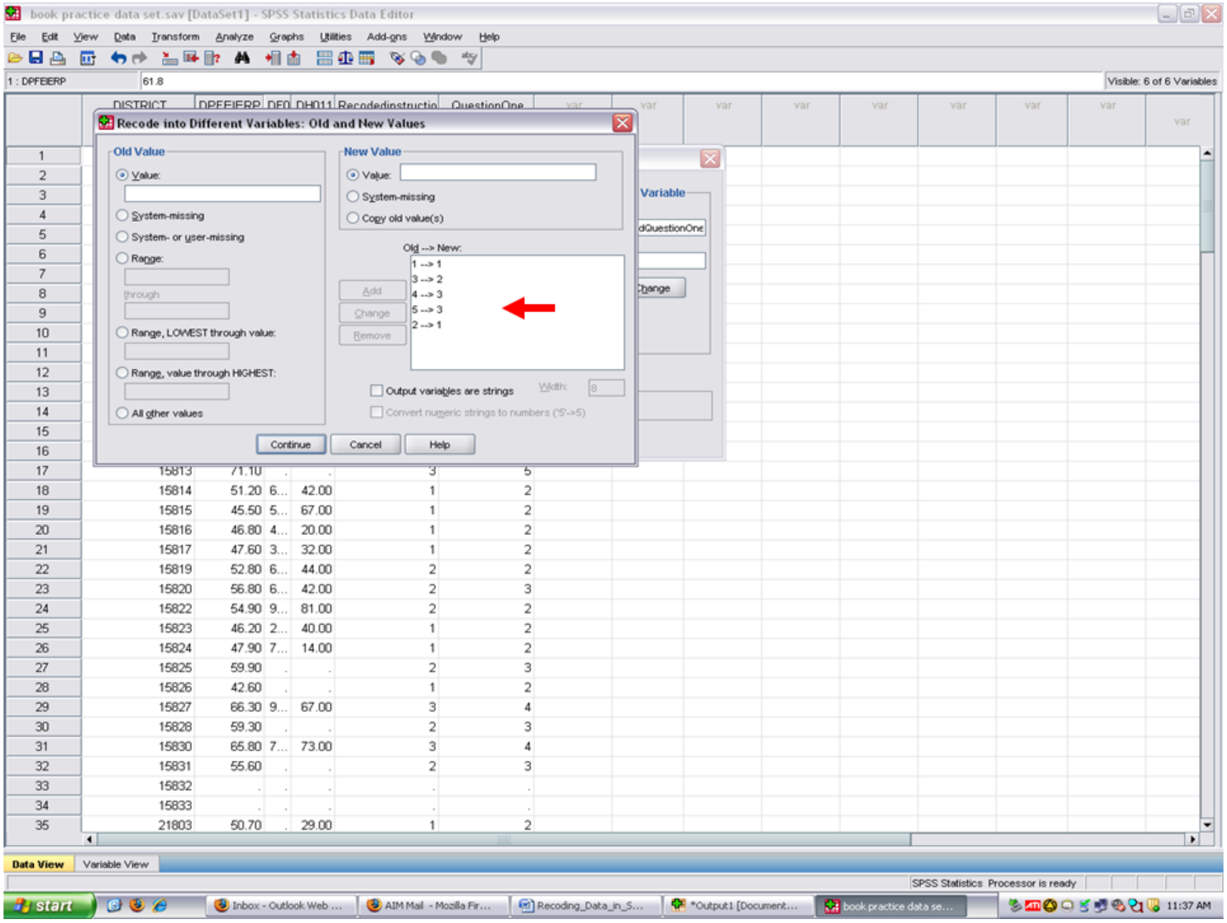
New Value
● Value: 3
○ System-missing
○ Copy old value(s)

Old --> New:
1 --> 1
3 --> 2
4 --> 3
2 --> 1

☐ Output variables are strings Width: 8
☐ Convert numeric strings to numbers ('5'->5)

	DISTRICT	DPFEIERP	DFO	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Now all 5 values in the Survey Question One variable are present in the Old – New box below. They will be recoded into 3 values.

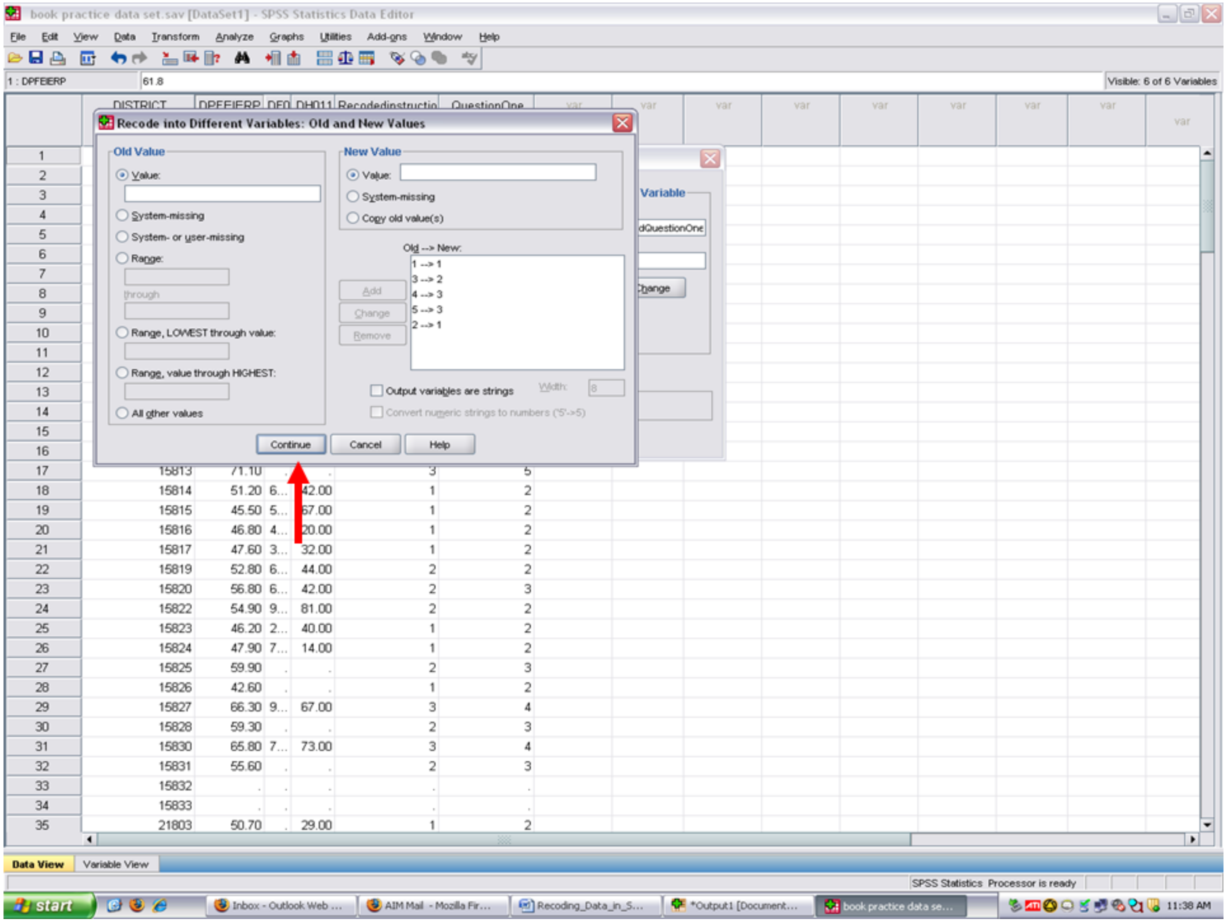


Old --> New:

1 --> 1
3 --> 2
4 --> 3
5 --> 3
2 --> 1

	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on Continue.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Recode into Different Variables: Old and New Values
Add
Change
Remove
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
11:38 AM

1 : DPFEIERP 61.8

Visible: 6 of 6 Variables

Old Value

● Value:

○ System-missing

○ System- or user-missing

○ Range:

through

○ Range, LOWEST through value:

○ Range, value through HIGHEST:

○ All other values

New Value

● Value:

○ System-missing

○ Copy old value(s)

Old --> New:

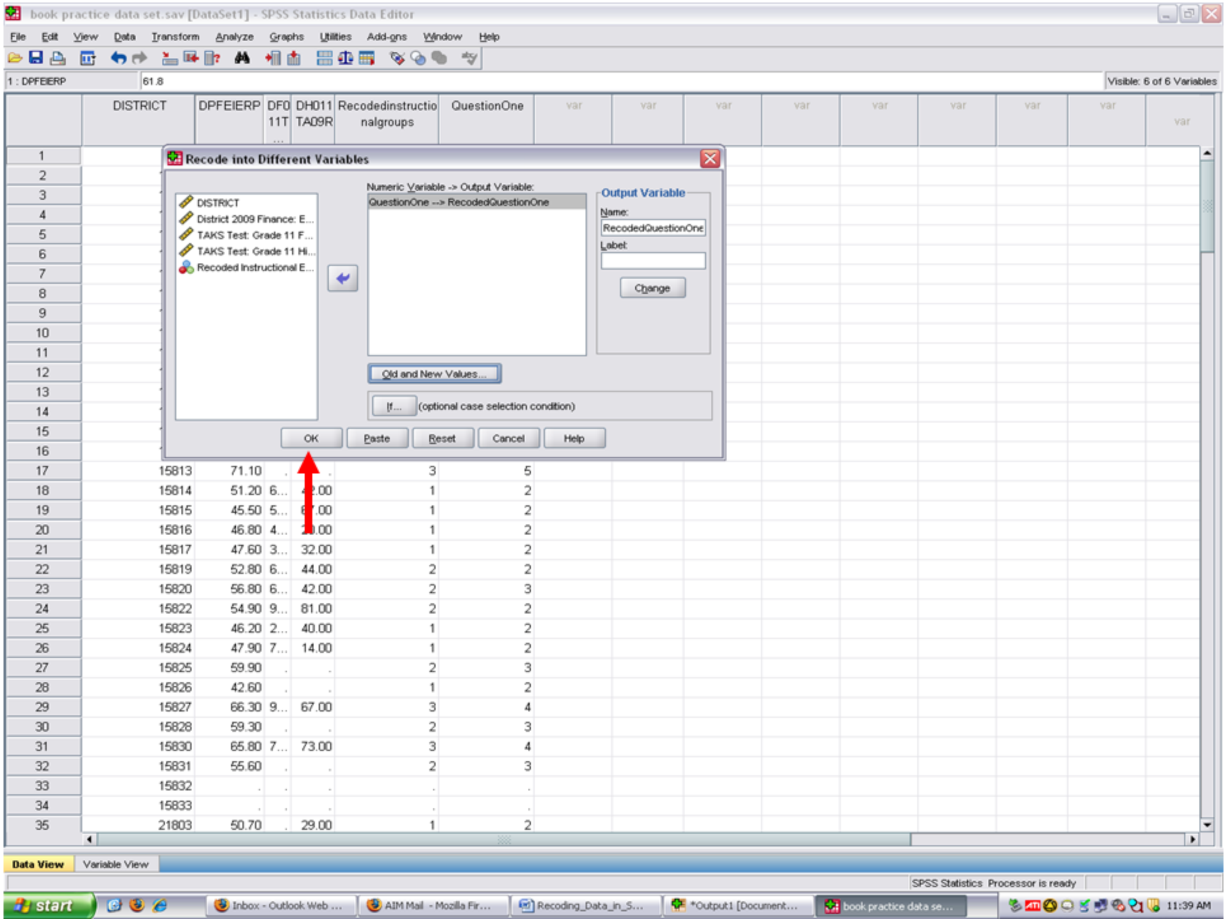
1 --> 1
3 --> 2
4 --> 3
5 --> 3
2 --> 1

☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'->5)

	DISTRICT	DPFEIERP	DF0	DH011	Recodedinstructio	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	42.00	1	2
19	15815	45.50	5...	67.00	1	2
20	15816	46.80	4...	20.00	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

Click on OK. SPSS will then generate a new variable for you, RecodedQuestionOne.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
61.8
Visible: 6 of 6 Variables
DISTRICT
District 2009 Finance: E...
TAKS Test: Grade 11 F...
TAKS Test: Grade 11 Hi...
Recoded Instructional E...
Old and New Values...
If...
(optional case selection condition)
OK
Paste
Reset
Cancel
Help
Change
Data View
Variable View
SPSS Statistics Processor is ready
start
11:39 AM

Recode into Different Variables

Numeric Variable -> Output Variable: QuestionOne --> RecodedQuestionOne

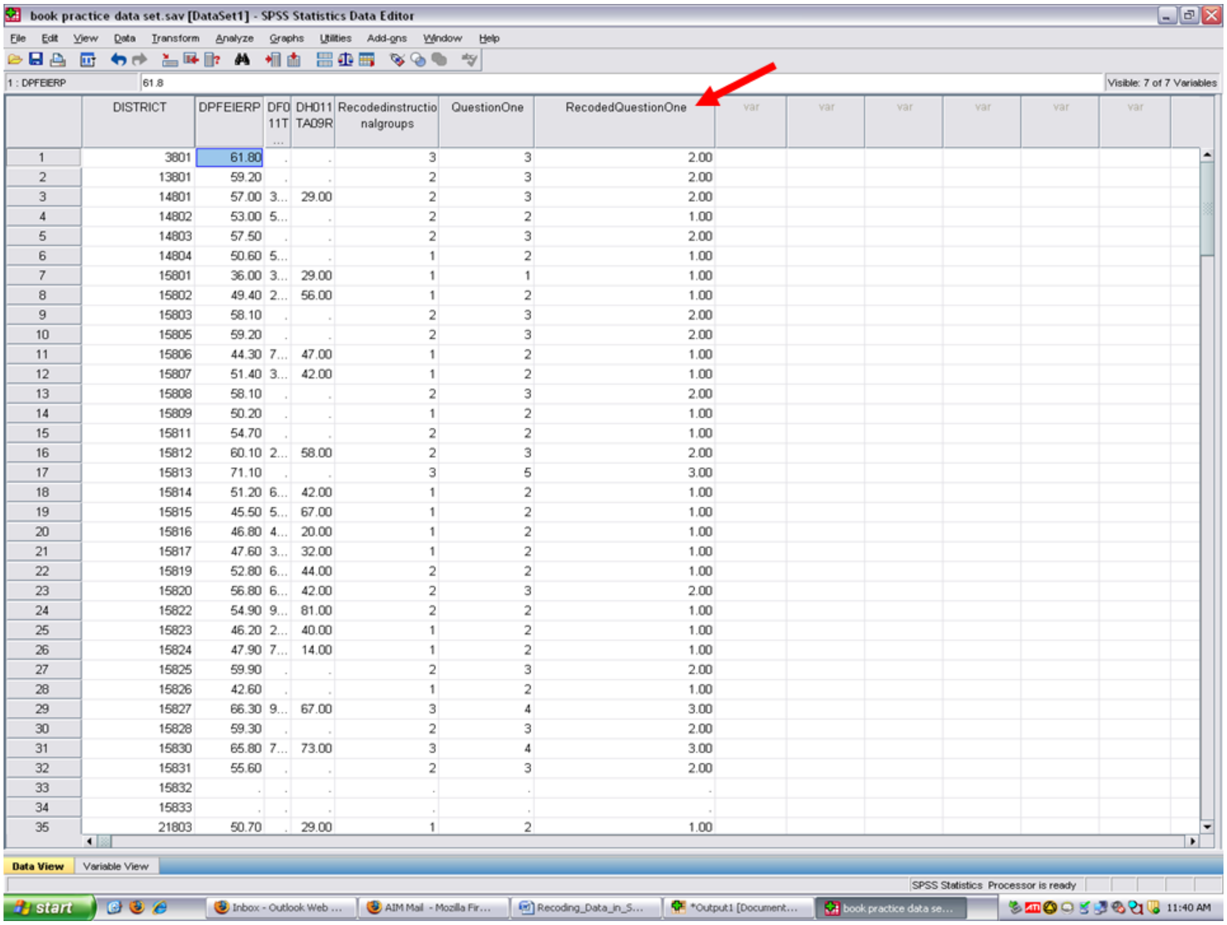
Output Variable

Name: RecodedQuestionOne

Label:

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne
17	15813	71.10	.	.	3	5
18	15814	51.20	6...	[illegible]	1	2
19	15815	45.50	5...	[illegible]	1	2
20	15816	46.80	4...	[illegible]	1	2
21	15817	47.60	3...	32.00	1	2
22	15819	52.80	6...	44.00	2	2
23	15820	56.80	6...	42.00	2	3
24	15822	54.90	9...	81.00	2	2
25	15823	46.20	2...	40.00	1	2
26	15824	47.90	7...	14.00	1	2
27	15825	59.90	.	.	2	3
28	15826	42.60	.	.	1	2
29	15827	66.30	9...	67.00	3	4
30	15828	59.30	.	.	2	3
31	15830	65.80	7...	73.00	3	4
32	15831	55.60	.	.	2	3
33	15832	.	.	.	.	.
34	15833	.	.	.	.	.
35	21803	50.70	.	29.00	1	2

The newly created variable, RecodedQuestionOne, will be added as the last variable in your dataset.


book practice data set.sav [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : DPFEIERP
61.8
Visible: 7 of 7 Variables
Data View
Variable View
SPSS Statistics Processor is ready
start
Inbox - Outlook Web ...
AIM Mail - Mozilla Fir...
Recoding_Data_in_S...
*Output1 [Document...
book practice data se...
11:40 AM

	DISTRICT	DPFEIERP	DF011T...	DH011TA09R	Recodedinstructionalgroups	QuestionOne	RecodedQuestionOne
1	3801	61.80	.	.	3	3	2.00
2	13801	59.20	.	.	2	3	2.00
3	14801	57.00	3...	29.00	2	3	2.00
4	14802	53.00	5...	.	2	2	1.00
5	14803	57.50	.	.	2	3	2.00
6	14804	50.60	5...	.	1	2	1.00
7	15801	36.00	3...	29.00	1	1	1.00
8	15802	49.40	2...	56.00	1	2	1.00
9	15803	58.10	.	.	2	3	2.00
10	15805	59.20	.	.	2	3	2.00
11	15806	44.30	7...	47.00	1	2	1.00
12	15807	51.40	3...	42.00	1	2	1.00
13	15808	58.10	.	.	2	3	2.00
14	15809	50.20	.	.	1	2	1.00
15	15811	54.70	.	.	2	2	1.00
16	15812	60.10	2...	58.00	2	3	2.00
17	15813	71.10	.	.	3	5	3.00
18	15814	51.20	6...	42.00	1	2	1.00
19	15815	45.50	5...	67.00	1	2	1.00
20	15816	46.80	4...	20.00	1	2	1.00
21	15817	47.60	3...	32.00	1	2	1.00
22	15819	52.80	6...	44.00	2	2	1.00
23	15820	56.80	6...	42.00	2	3	2.00
24	15822	54.90	9...	81.00	2	2	1.00
25	15823	46.20	2...	40.00	1	2	1.00
26	15824	47.90	7...	14.00	1	2	1.00
27	15825	59.90	.	.	2	3	2.00
28	15826	42.60	.	.	1	2	1.00
29	15827	66.30	9...	67.00	3	4	3.00
30	15828	59.30	.	.	2	3	2.00
31	15830	65.80	7...	73.00	3	4	3.00
32	15831	55.60	.	.	2	3	2.00
33	15832	.	.	.	.	.	.
34	15833	.	.	.	.	.	.
35	21803	50.70	.	29.00	1	2	1.00

You have generated a new variable, one not in your original dataset, that contains 3 values, instead of the 5 values in the Question One variable.

Converting Data from An Excel File into SPSS

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
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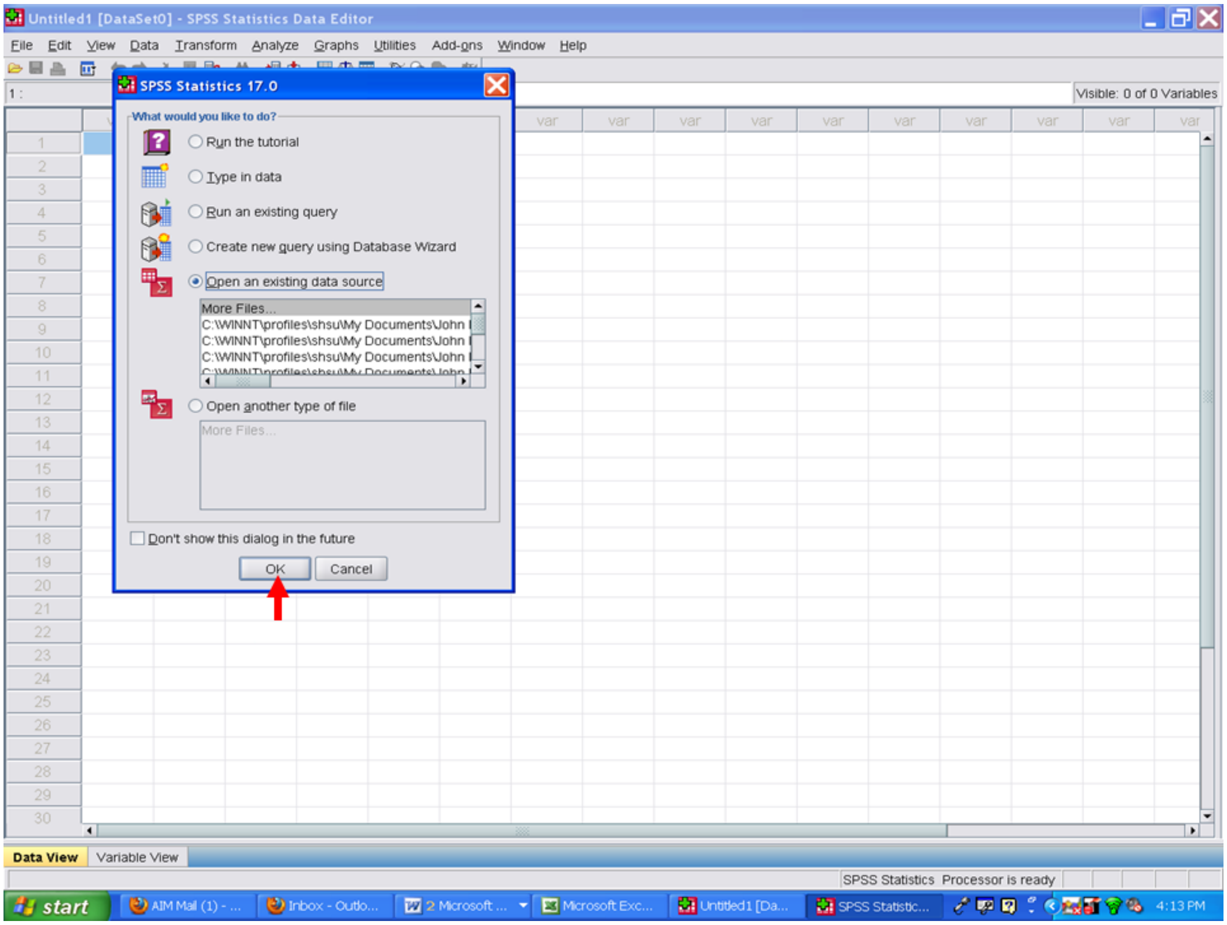
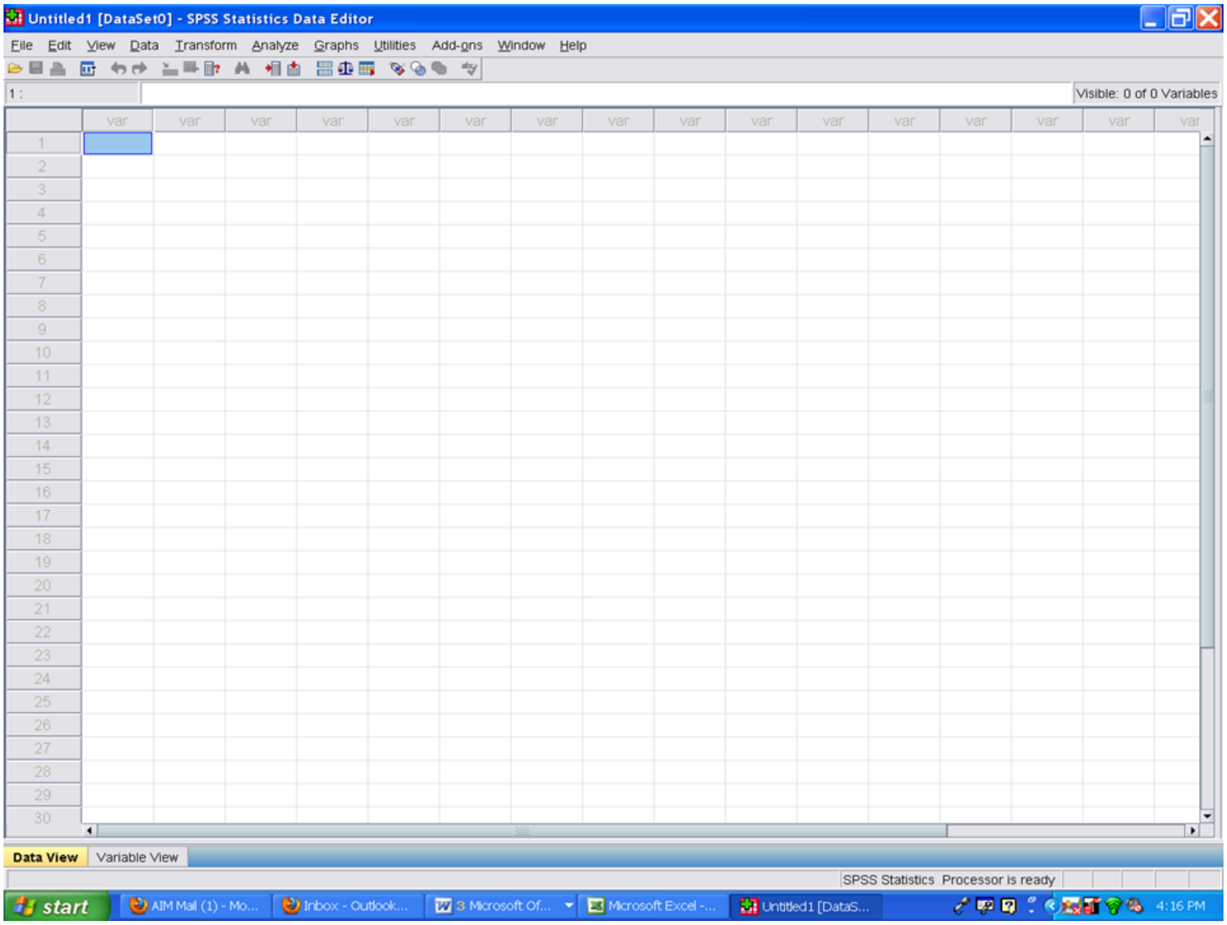
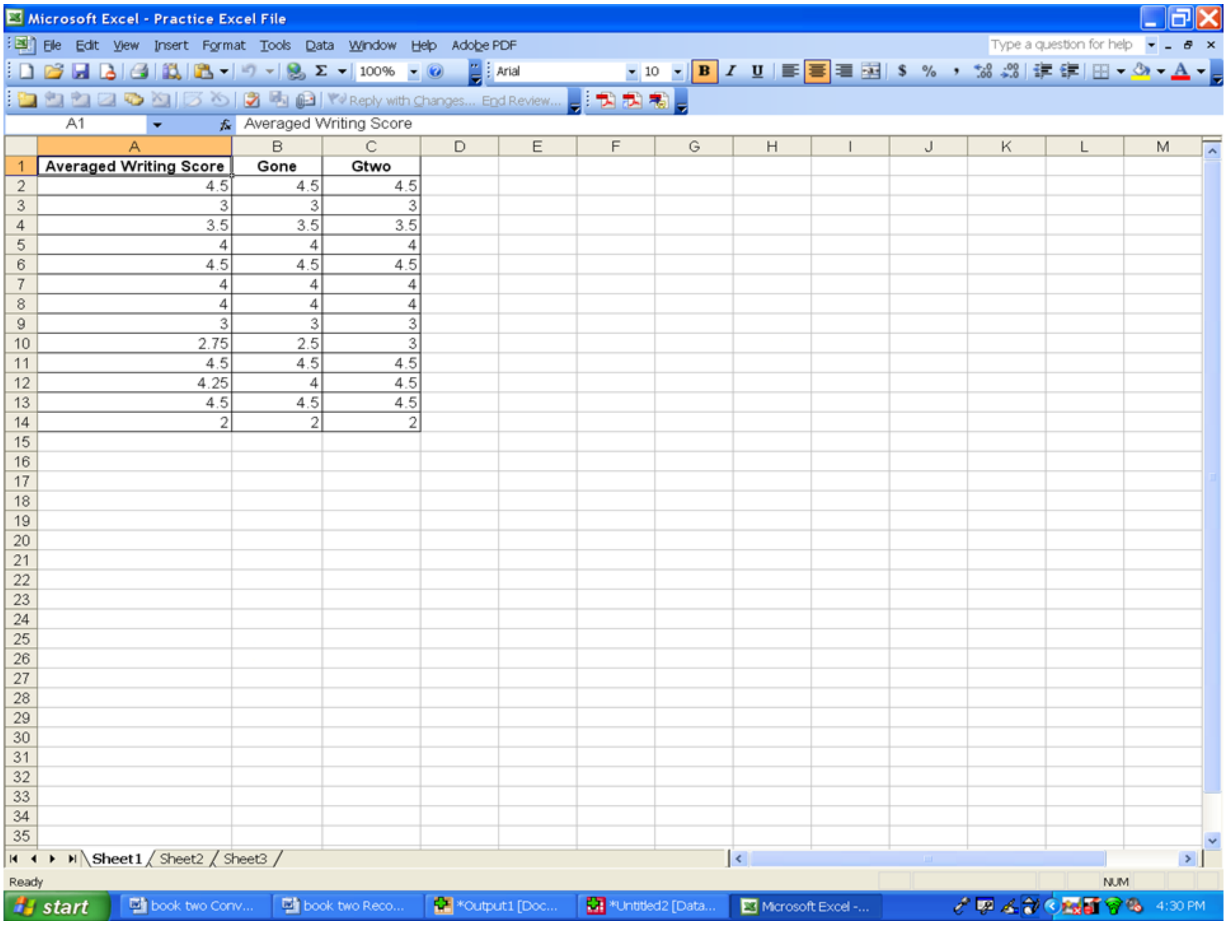
These procedures are to be followed when you have data already entered into an Excel file. In this chapter, you will be provided with steps and screenshots on how to convert the data from an Excel file into an SPSS data file. Open up your SPSS program and this screen will appear. Click on Cancel.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 0 of 0 Variables
SPSS Statistics 17.0
What would you like to do?
○ Run the tutorial
○ Type in data
○ Run an existing query
○ Create new query using Database Wizard
● Open an existing data source
More Files...
C:\WINNT\profiles\shsu\My Documents\John
C:\WINNT\profiles\shsu\My Documents\John
C:\WINNT\profiles\shsu\My Documents\John
○ Open another type of file
More Files...
☐ Don't show this dialog in the future
OK
Cancel
var
Data View
Variable View
SPSS Statistics Processor is ready
start
AIM Mail (1) - ...
Inbox - Outlo...
2 Microsoft ...
Microsoft Exc...
Untitled1 [Da...
SPSS Statistic...
4:13 PM

Your screen will now look like this.



The Excel file we will be converting for this example looks like the following:


Microsoft Excel - Practice Excel File
File Edit View Insert Format Tools Data Window Help Adobe PDF
A1
Averaged Writing Score
Sheet1 Sheet2 Sheet3
Ready
NUM
start
4:30 PM

Averaged Writing Score	Gone	Gtwo
4.5	4.5	4.5
3	3	3
3.5	3.5	3.5
4	4	4
4.5	4.5	4.5
4	4	4
4	4	4
3	3	3
2.75	2.5	3
4.5	4.5	4.5
4.25	4	4.5
4.5	4.5	4.5
2	2	2

In this excel file are three variables: AveragedWritingScore, Gone, and Gtwo. All three are numeric variables. The first row contains the variable names. Rows 2 through 14 contain the data for the variables.

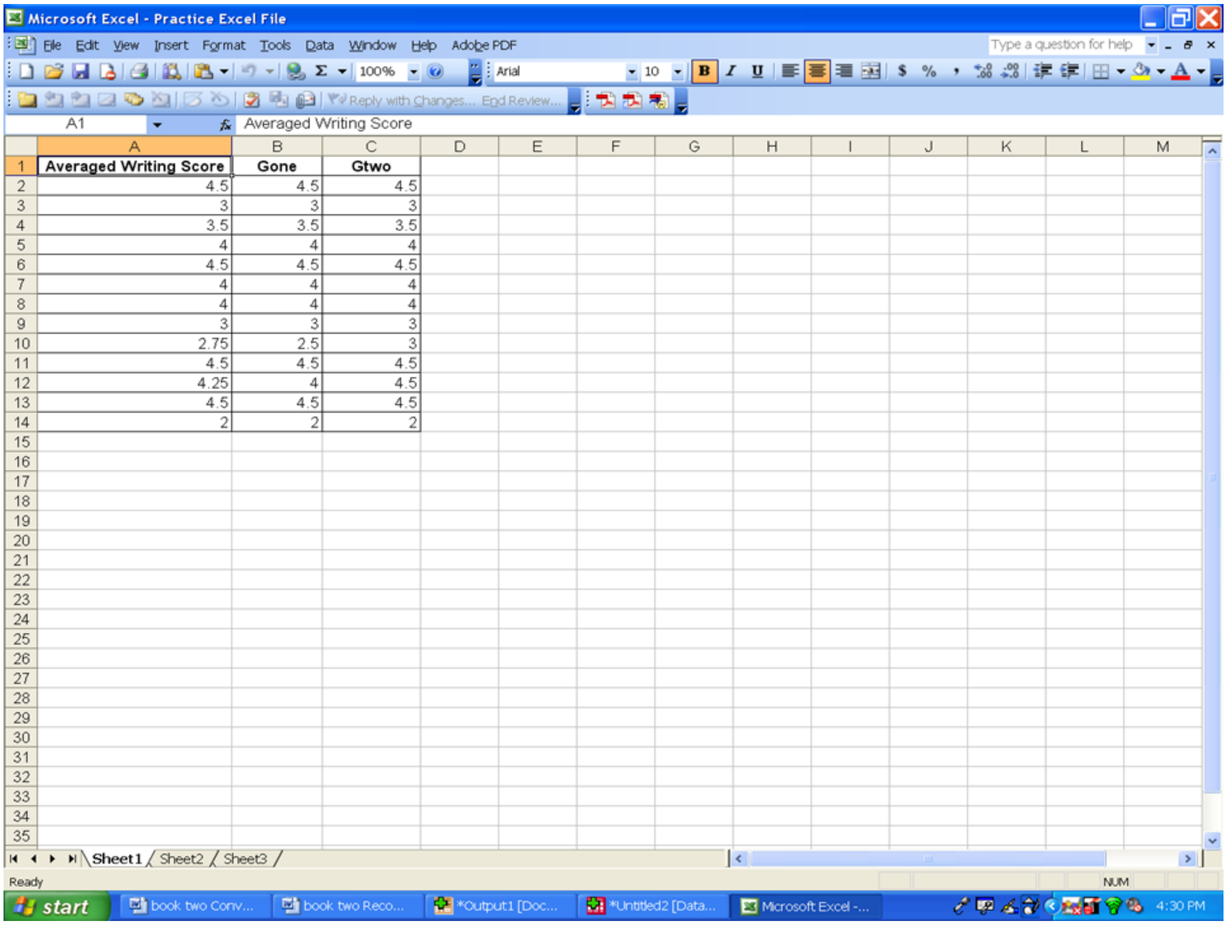
Prior to the next steps, make sure that the Excel file that you intend to convert into SPSS is not open. If it is open and in use, SPSS will not be able to convert the file.

Once you are back in the SPSS data view window,

√ Click on File

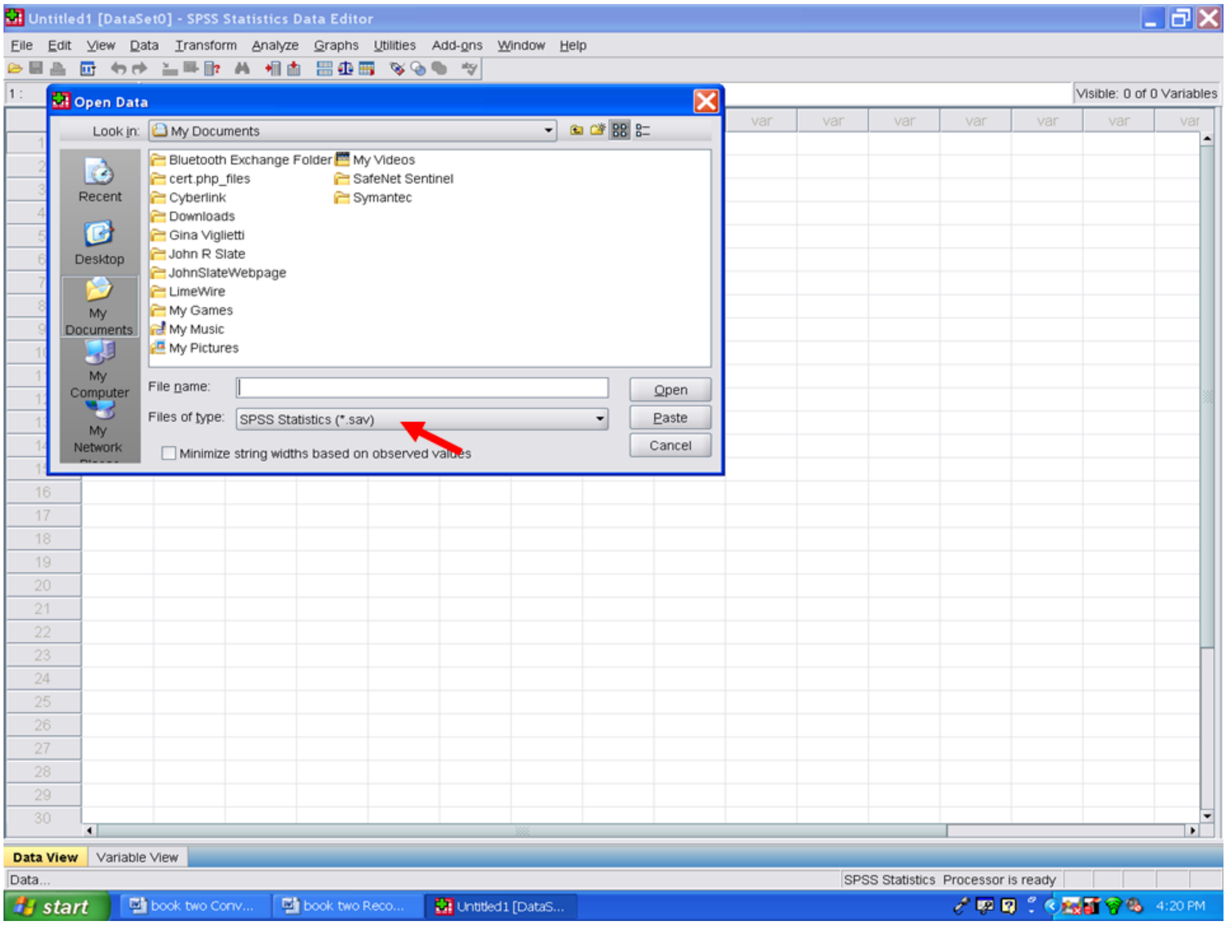
√ Click on Open

√ Click on Data



Averaged Writing Score	Gone	Gtwo
4.5	4.5	4.5
3	3	3
3.5	3.5	3.5
4	4	4
4.5	4.5	4.5
4	4	4
4	4	4
3	3	3
2.75	2.5	3
4.5	4.5	4.5
4.25	4	4.5
4.5	4.5	4.5
2	2	2

A screen similar to the one below will open up on your computer. You need to locate where your Excel file is located. First, you will need to change the Files of type below.



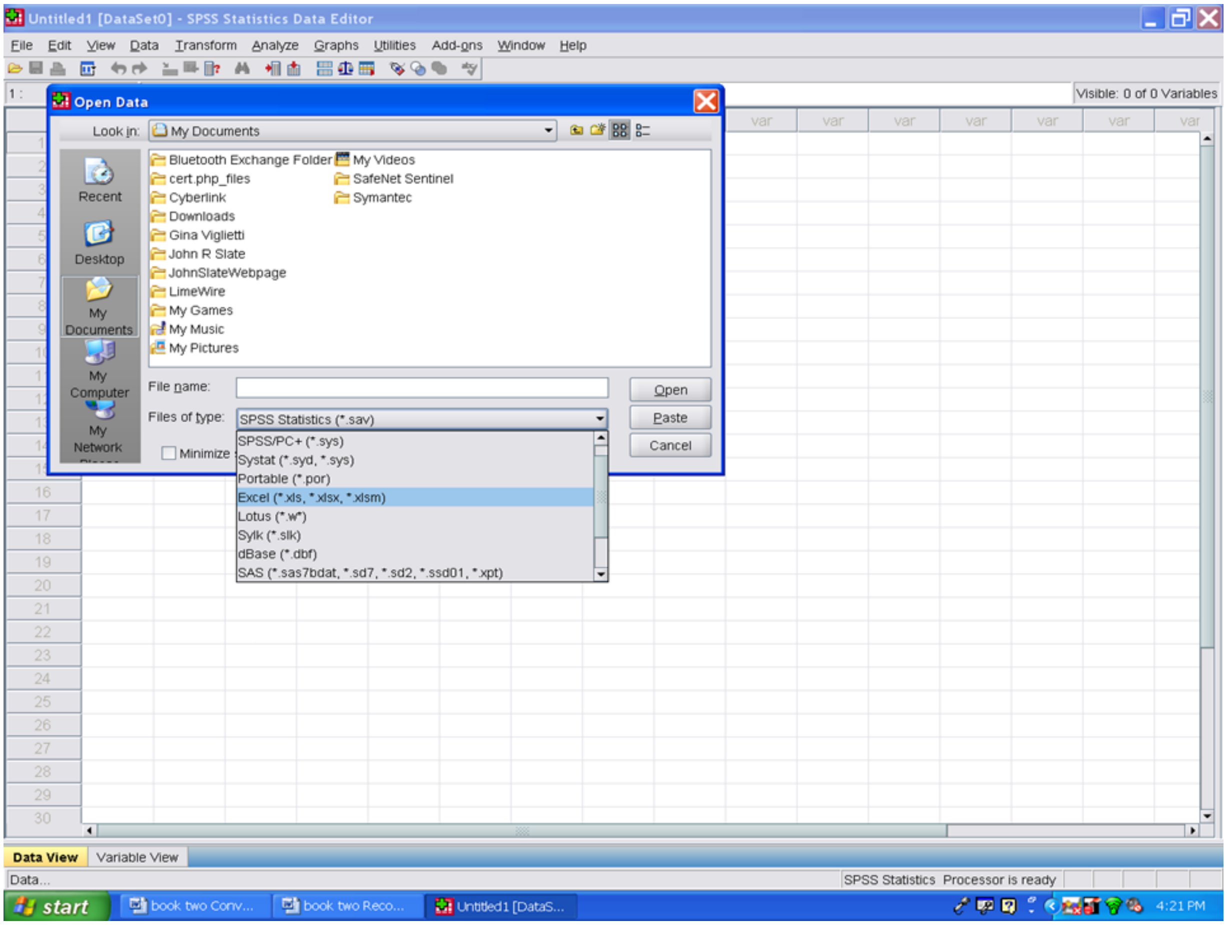
Look in: My Documents

File name:

Files of type: SPSS Statistics (*.sav)

☐ Minimize string widths based on observed values

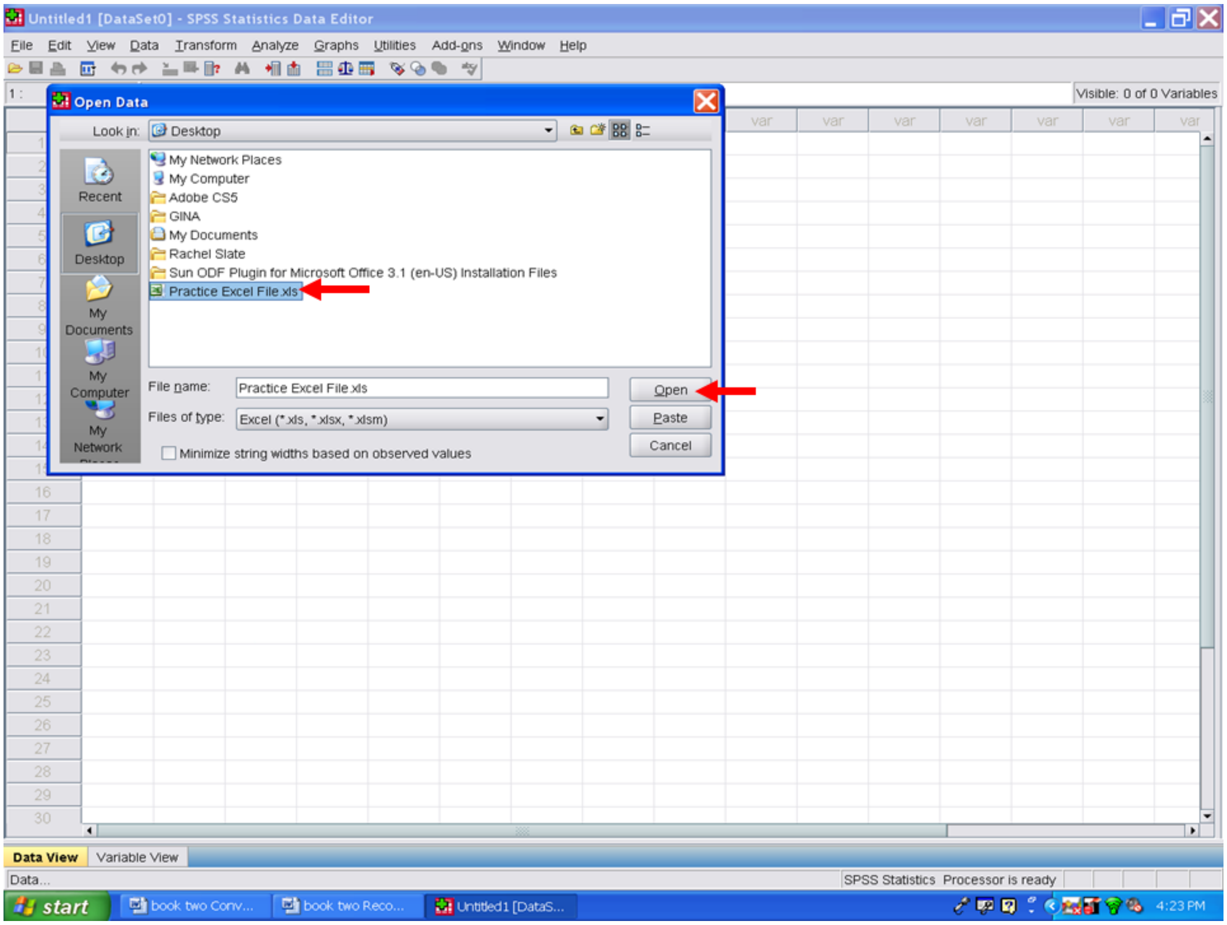
Change from SPSS statistics (*.sav) to Excel (*.xls). Then find where the file is located and its name.



Look in: My Documents

Files of type: SPSS Statistics (*.sav)

In the case of this example, the Excel file was located on the Desktop and is titled, Practice Excel File.xls. Then click on Open.



Look in: Desktop

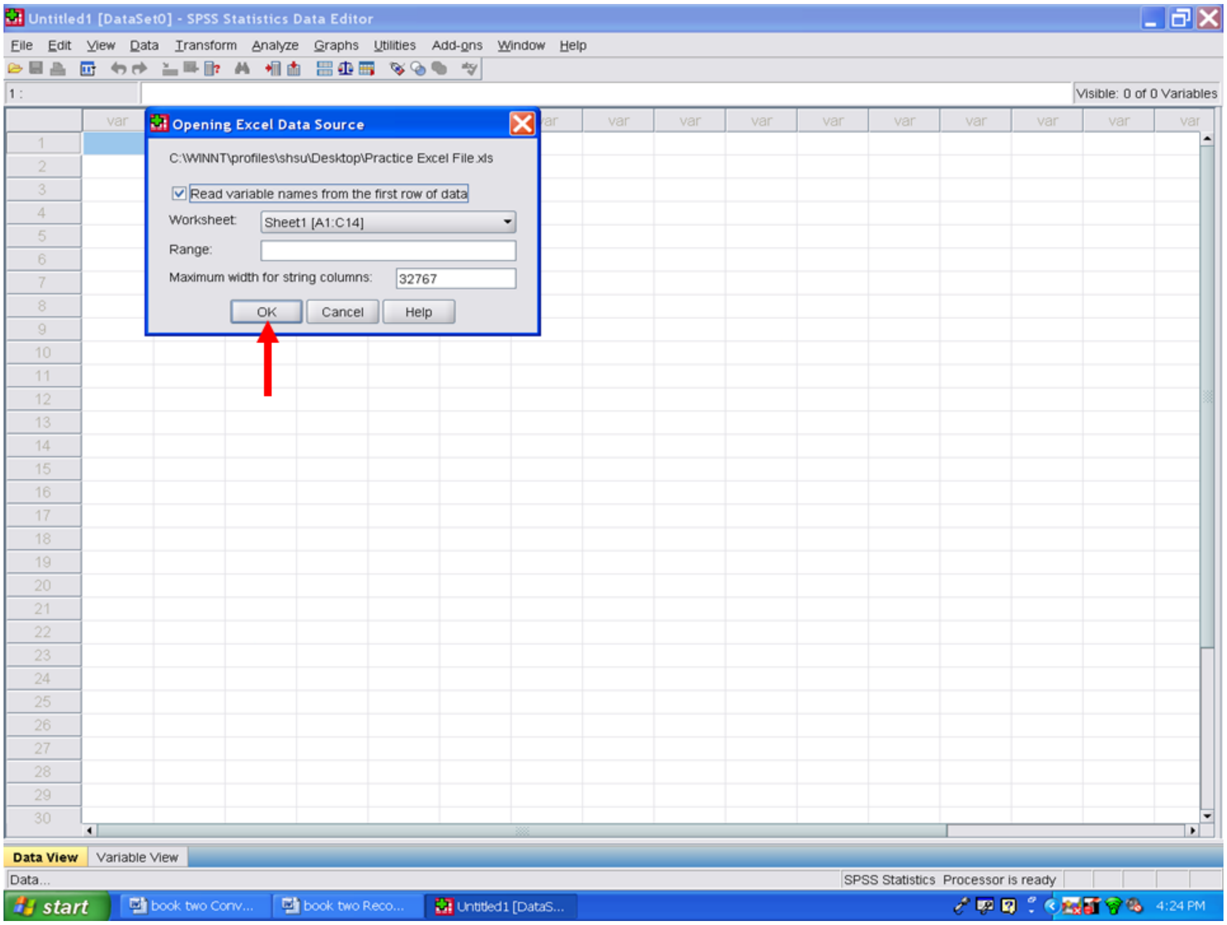
File name: Practice Excel File.xls

Files of type: Excel (*.xls, *.xlsx, *.xlsm)

☐ Minimize string widths based on observed values

After clicking on open, the screen below will appear. For an Excel file to be converted properly into SPSS, the first row in the Excel file should be the names of the variables. All of the other rows in the Excel file should be the data. If you use more than one row to describe your variables, you will not be able to convert your Excel file into SPSS using these steps.

Once this screen has appeared, click on OK.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 0 of 0 Variables
Data View
Variable View
start
book two Conv...
book two Reco...
Untitled1 [DataS...
4:24 PM

Opening Excel Data Source

C:\WINNT\profiles\shsu\Desktop\Practice Excel File.xls

☑ Read variable names from the first row of data

Worksheet: Sheet1 [A1:C14]

Range:

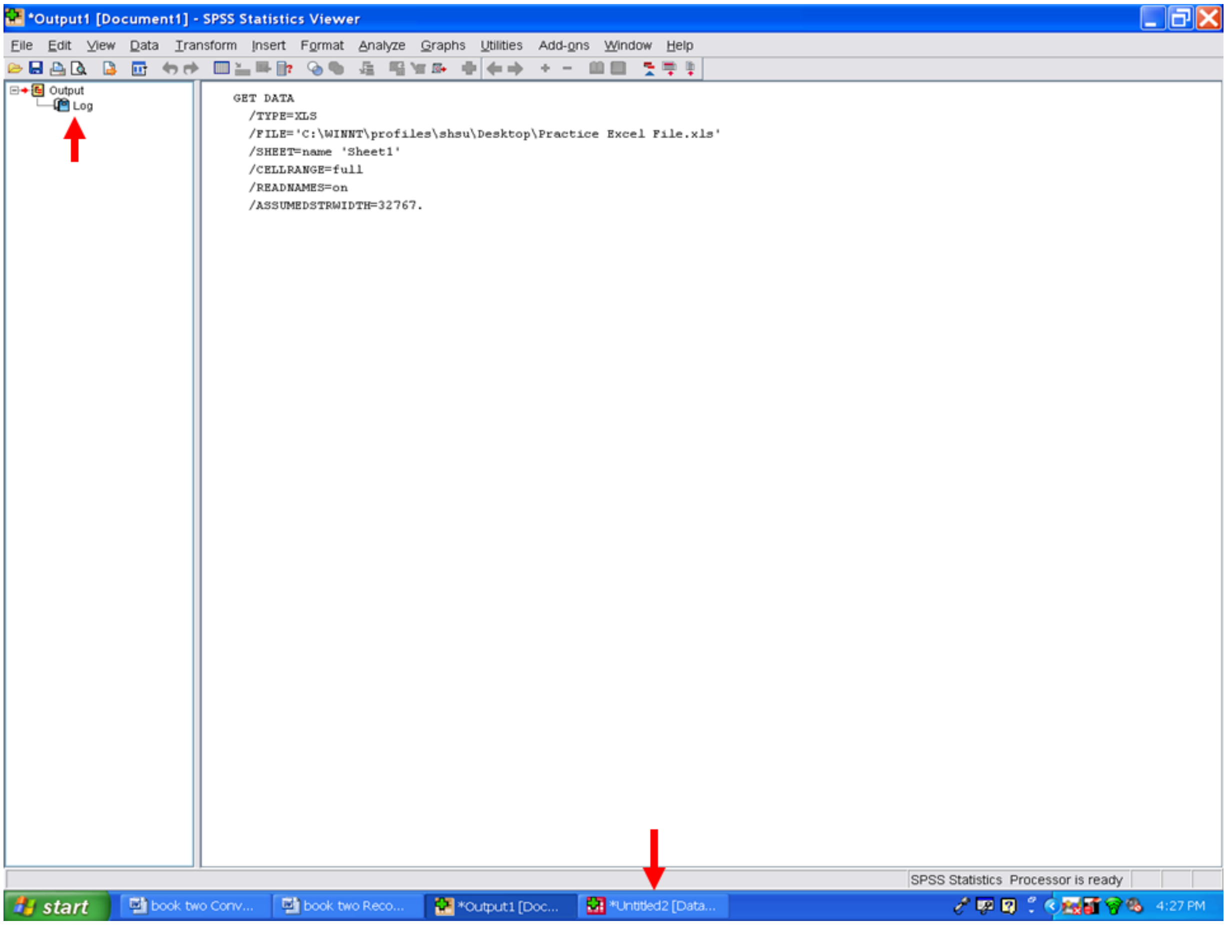
Maximum width for string columns: 32767

Data...

SPSS Statistics Processor is ready

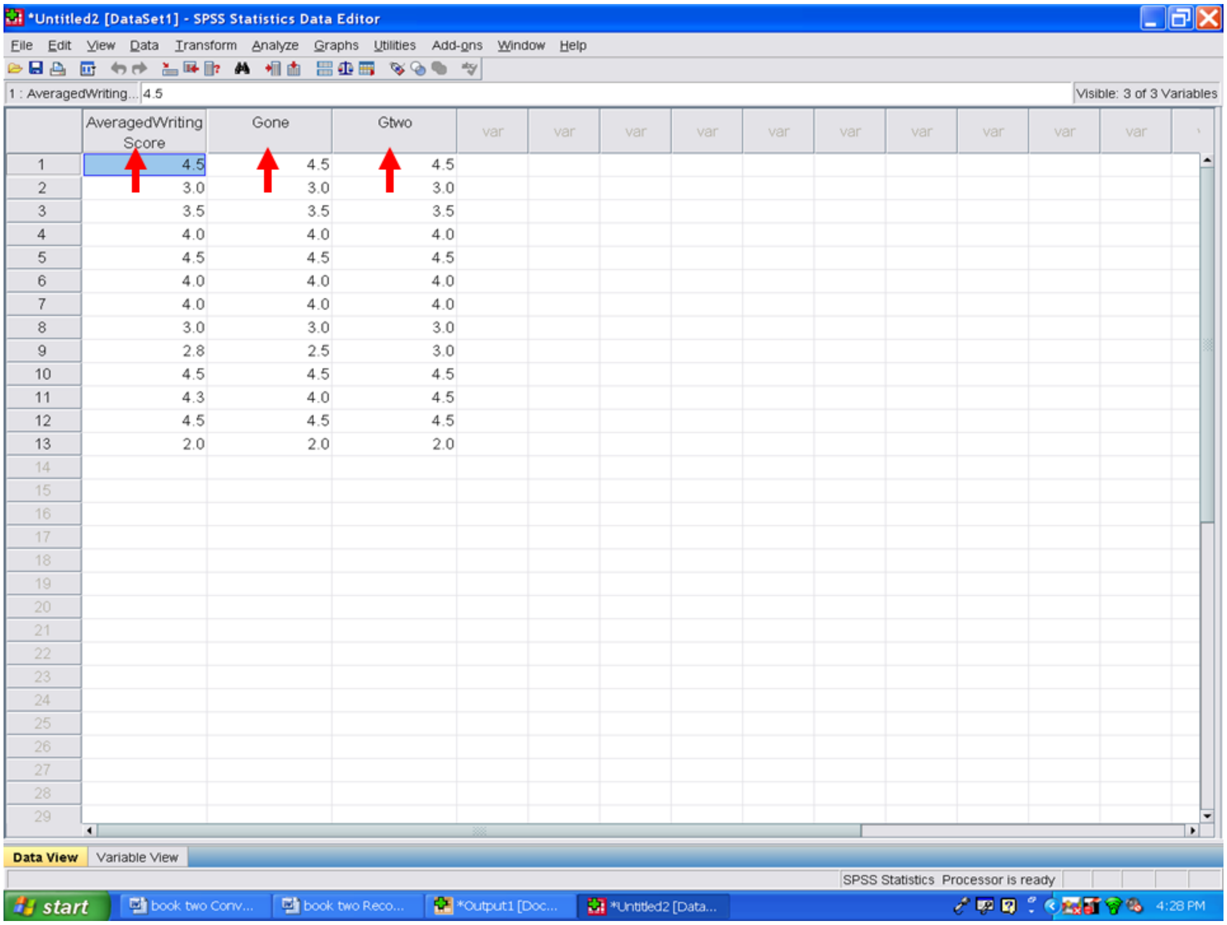
You should then be sent to the Output window.

Click on the SPSS data button below to get back to your SPSS screen.


*Output1 [Document1] - SPSS Statistics Viewer
File Edit View Data Transform Insert Format Analyze Graphs Utilities Add-ons Window Help
Output
Log
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:27 PM

```
GET DATA
  /TYPE=XLS
  /FILE='C:\WINNT\profiles\shsu\Desktop\Practice Excel File.xls'
  /SHEET=name 'Sheet1'
  /CELLRANGE=full
  /READNAMES=on
  /ASSUMEDSTRWIDTH=32767.
```

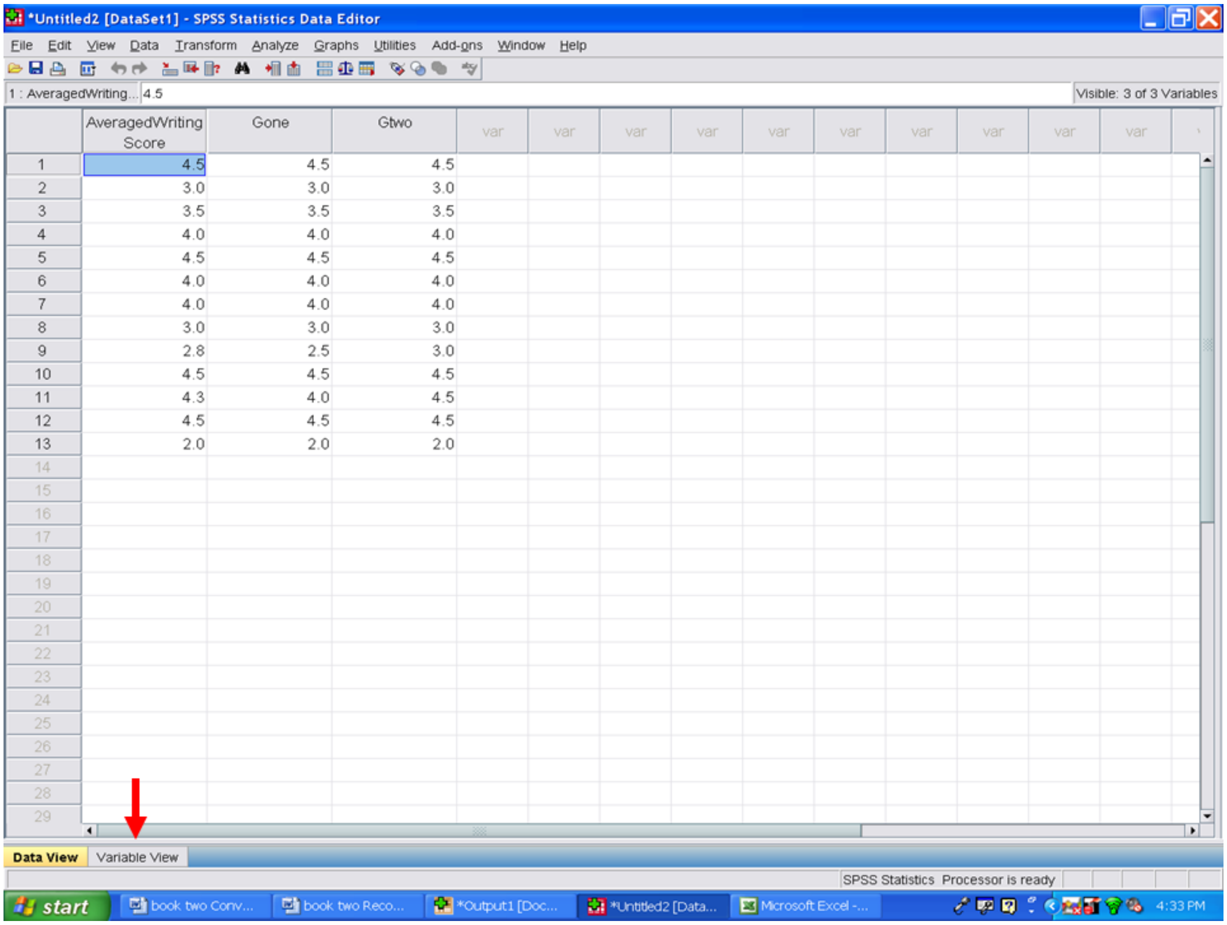
Clicking on the SPSS data icon as depicted above should take you to the Data View screen. In this case, three variables were in the Excel data file: AveragedWritingScore, Gone, and Gtwo. These three variables were directly converted from the Excel file into a SPSS datafile.


*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 3 of 3 Variables
var
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:28 PM

1 : AveragedWriting... 4.5

	AveragedWriting Score	Gone	Gtwo
1	4.5	4.5	4.5
2	3.0	3.0	3.0
3	3.5	3.5	3.5
4	4.0	4.0	4.0
5	4.5	4.5	4.5
6	4.0	4.0	4.0
7	4.0	4.0	4.0
8	3.0	3.0	3.0
9	2.8	2.5	3.0
10	4.5	4.5	4.5
11	4.3	4.0	4.5
12	4.5	4.5	4.5
13	2.0	2.0	2.0

Now we need to make sure that the variables are correctly identified and labeled in this SPSS dataset. Click on Variable View.



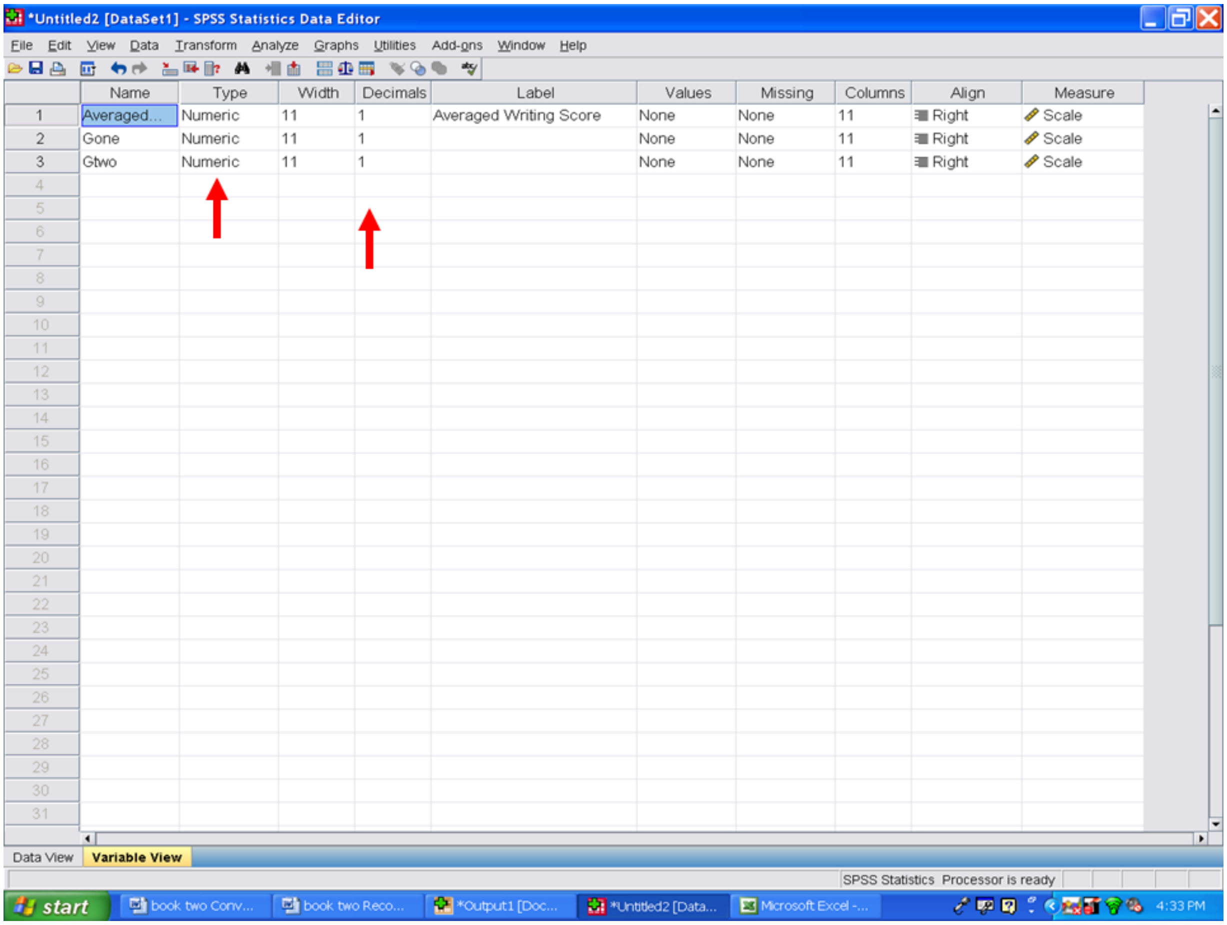
1 : AveragedWriting... 4.5

Visible: 3 of 3 Variables

	AveragedWriting Score	Gone	Gtwo	var	var	var	var	var	var	var	var	var	var
1	4.5	4.5	4.5										
2	3.0	3.0	3.0										
3	3.5	3.5	3.5										
4	4.0	4.0	4.0										
5	4.5	4.5	4.5										
6	4.0	4.0	4.0										
7	4.0	4.0	4.0										
8	3.0	3.0	3.0										
9	2.8	2.5	3.0										
10	4.5	4.5	4.5										
11	4.3	4.0	4.5										
12	4.5	4.5	4.5										
13	2.0	2.0	2.0										

SPSS Statistics Processor is ready

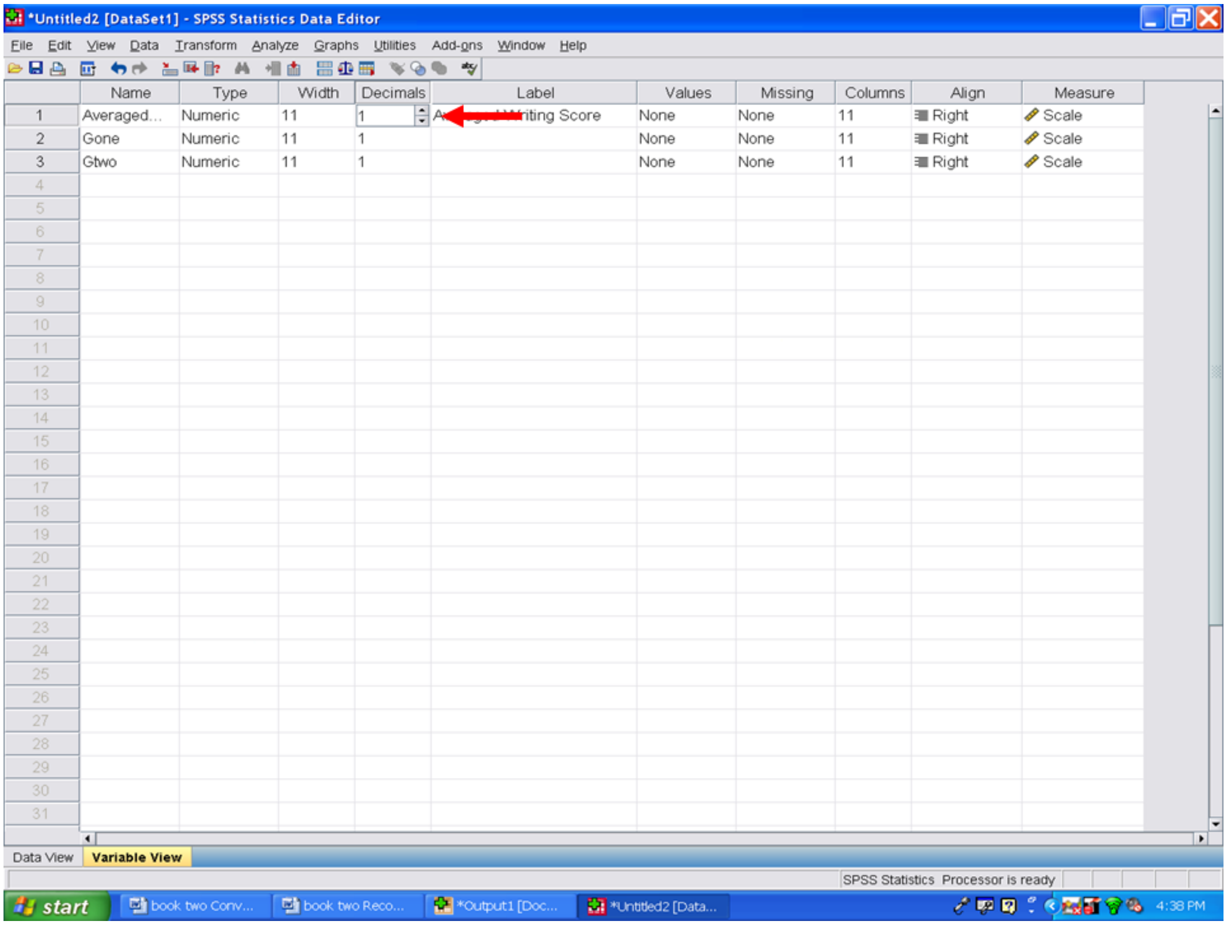
In the case of our example, the screen looks like the following:


*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
Microsoft Excel -...
4:33 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Averaged...	Numeric	11	1	Averaged Writing Score	None	None	11	Right	Scale
2	Gone	Numeric	11	1		None	None	11	Right	Scale
3	Gtwo	Numeric	11	1		None	None	11	Right	Scale

All three of the variables have been correctly identified as numeric. The number of decimals needs to be increased to 2, not 1 as shown above.

To change the number of decimal places from 1 to 2, click on one of the decimal cells. In the screen below, the decimal cell for the first row has been clicked on. Once clicked an up and a down arrow will appear.

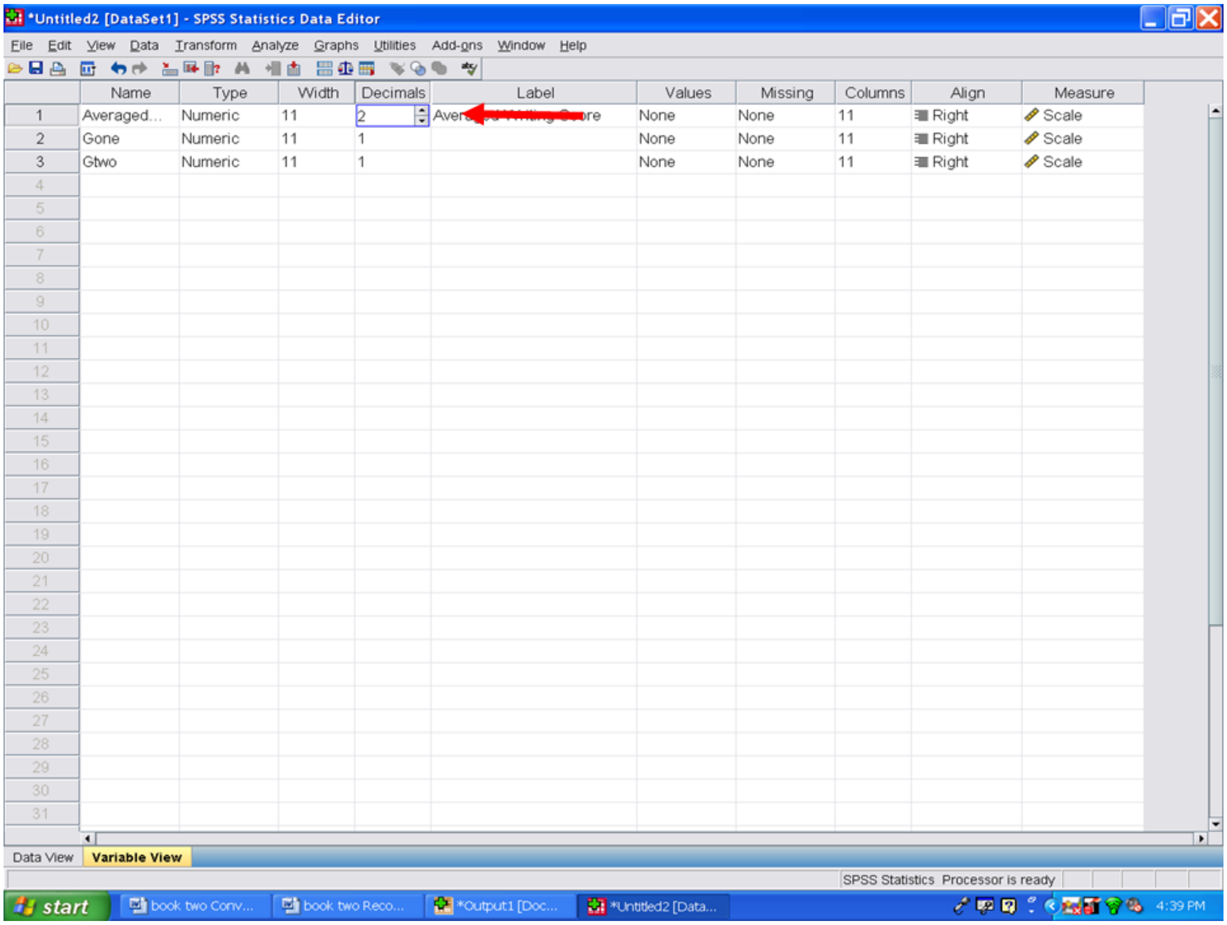

*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:38 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Averaged...	Numeric	11	1	Averaged Writing Score	None	None	11	Right	Scale
2	Gone	Numeric	11	1		None	None	11	Right	Scale
3	Gtwo	Numeric	11	1		None	None	11	Right	Scale

We need to increase the number of decimal places so we will click on the up arrow.

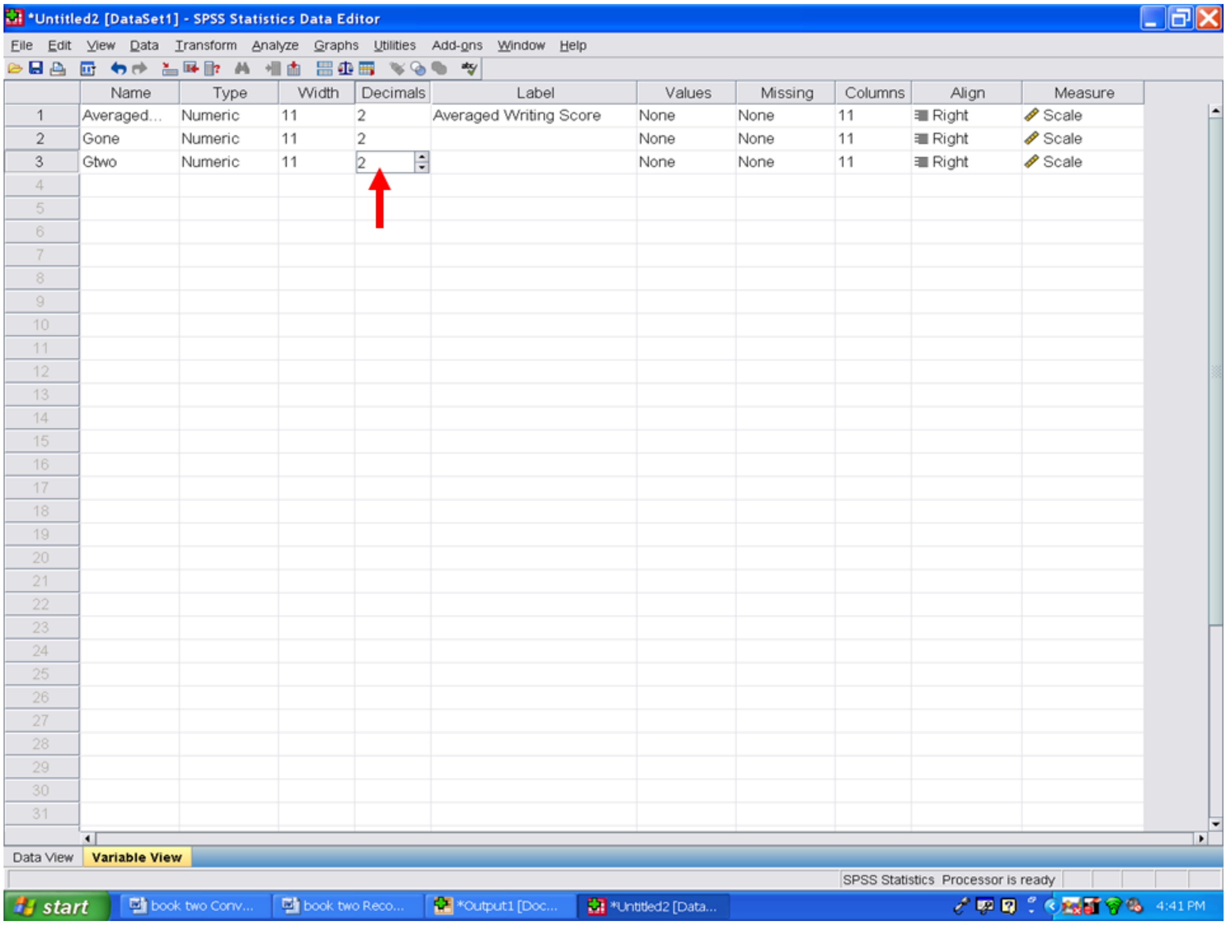
Clicking one time on the up arrow will change the number of decimals from 1 to 2.

Now we will do the same for row 2 and for row 3.


*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:39 PM

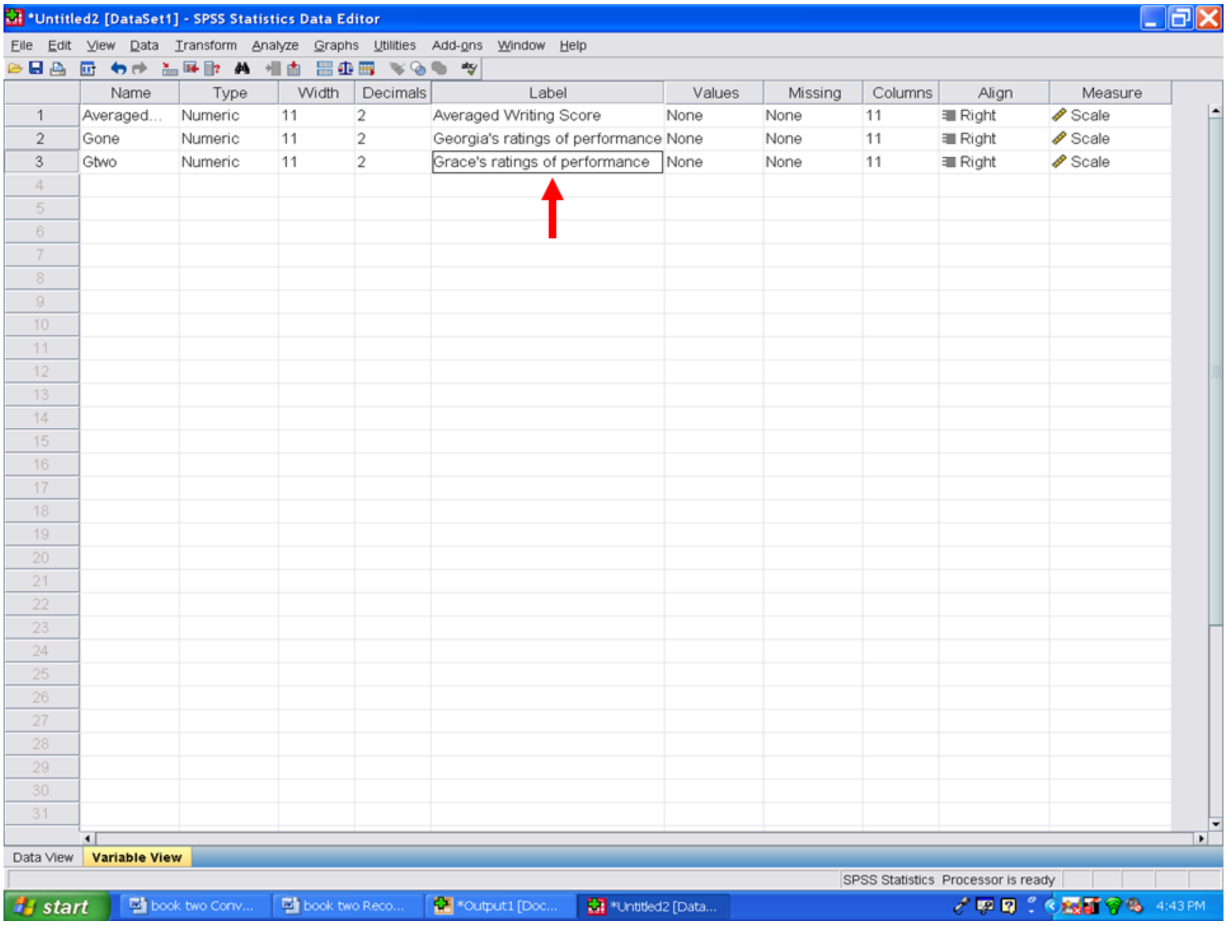
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Averaged...	Numeric	11	2	Averaged Writing Score	None	None	11	Right	Scale
2	Gone	Numeric	11	1		None	None	11	Right	Scale
3	Gtwo	Numeric	11	1		None	None	11	Right	Scale

Viewing the screen below will show you that all three variables now have 2 decimal places.


*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:41 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Averaged...	Numeric	11	2	Averaged Writing Score	None	None	11	Right	Scale
2	Gone	Numeric	11	2		None	None	11	Right	Scale
3	Gtwo	Numeric	11	2		None	None	11	Right	Scale

Prior to conducting any statistical analyses, we recommend that you type in identifying information in the Label column for each variable. The information you type in the Label column will be the information printed out in the SPSS output and will make it easier to interpret.


*Untitled2 [DataSet1] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
book two Conv...
book two Reco...
*Output1 [Doc...
*Untitled2 [Data...
4:43 PM

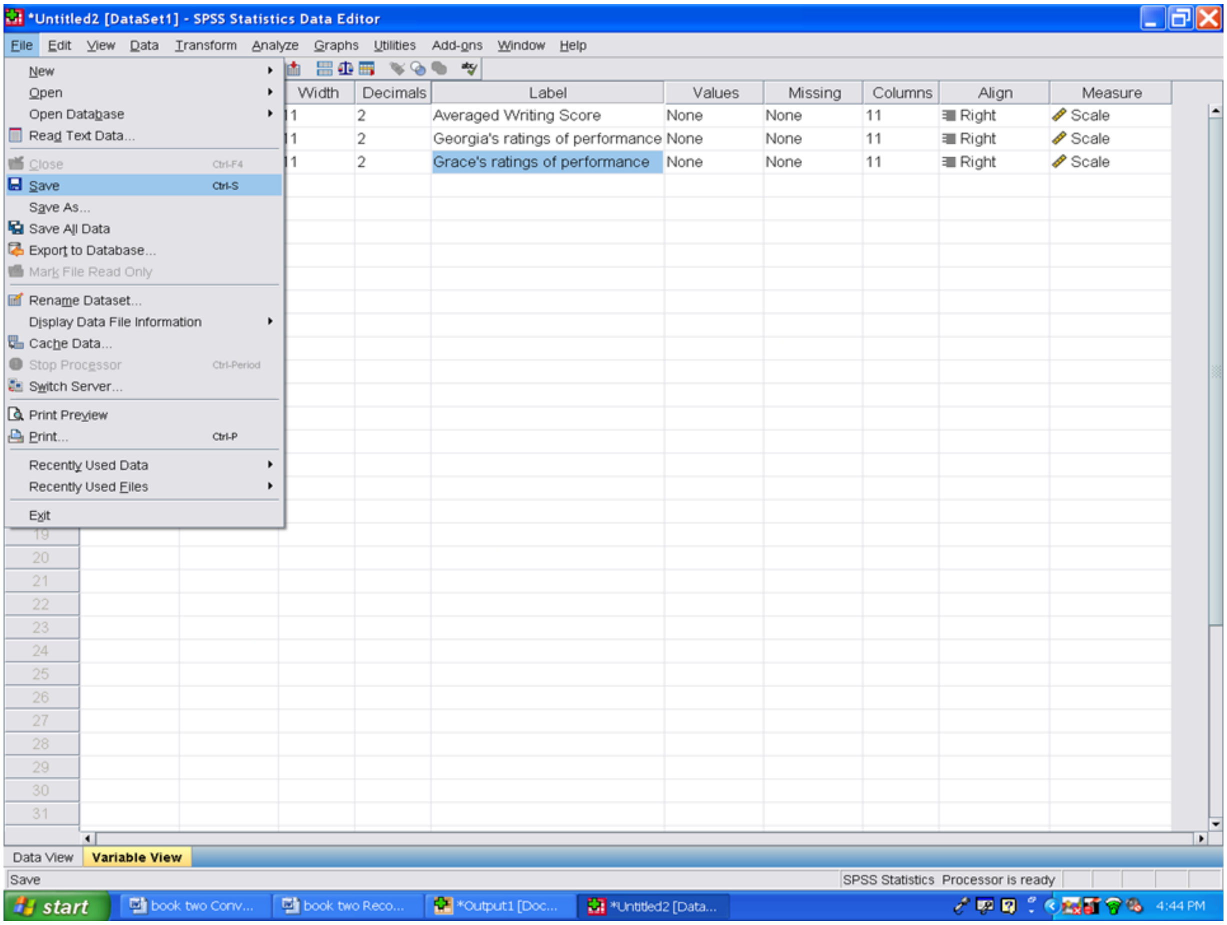
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Averaged...	Numeric	11	2	Averaged Writing Score	None	None	11	Right	Scale
2	Gone	Numeric	11	2	Georgia's ratings of performance	None	None	11	Right	Scale
3	Gtwo	Numeric	11	2	Grace's ratings of performance	None	None	11	Right	Scale

We have converted our Excel file into a SPSS dataset. Please save it prior to conducting any statistical analyses.

√ Click on File

√ Click on Save

Give it a name of your choosing and save it in a location that you will remember later.



Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	2	Averaged Writing Score	None	None	11	Right	Scale
1	2	Georgia's ratings of performance	None	None	11	Right	Scale
1	2	Grace's ratings of performance	None	None	11	Right	Scale

Save

SPSS Statistics Processor is ready

Typing Survey Data Into SPSS

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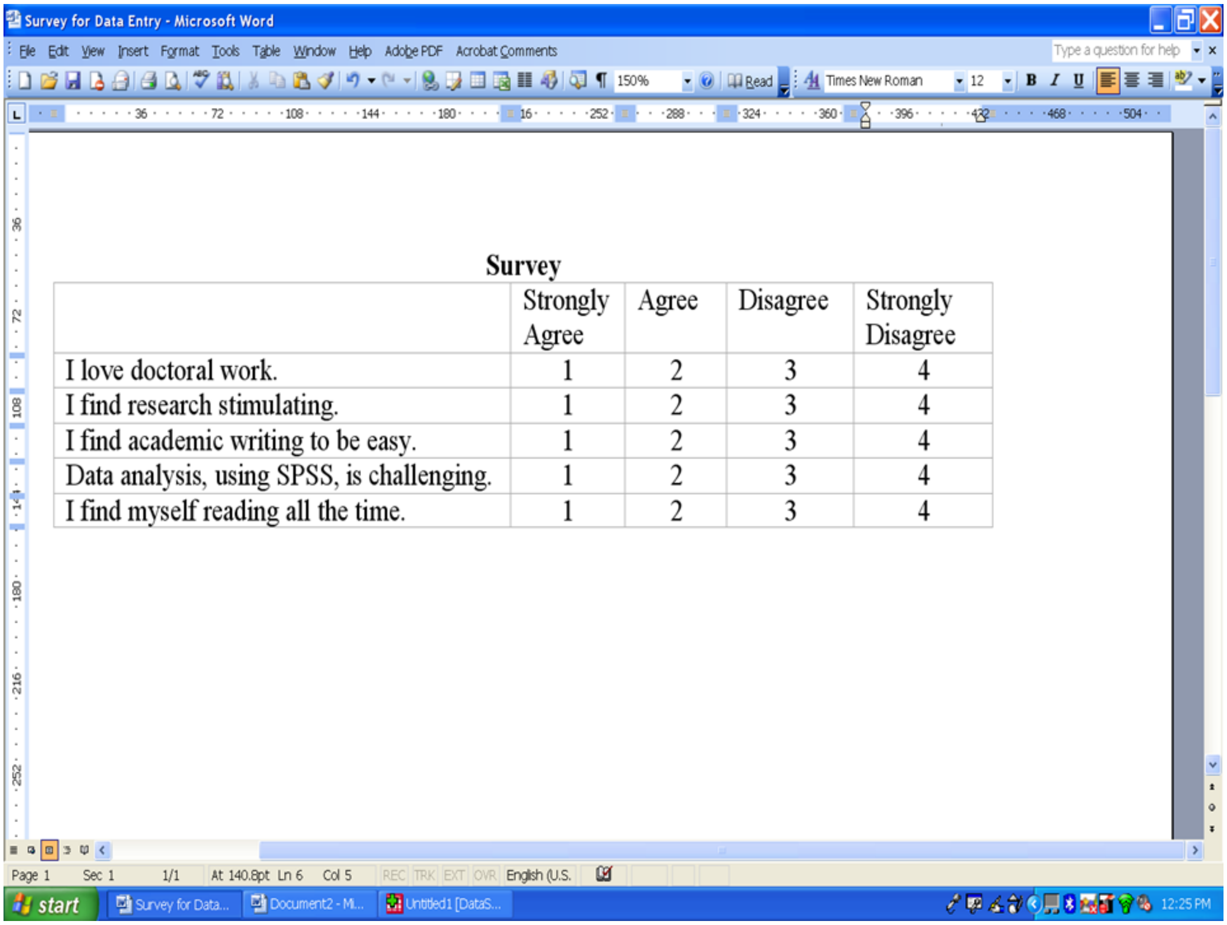
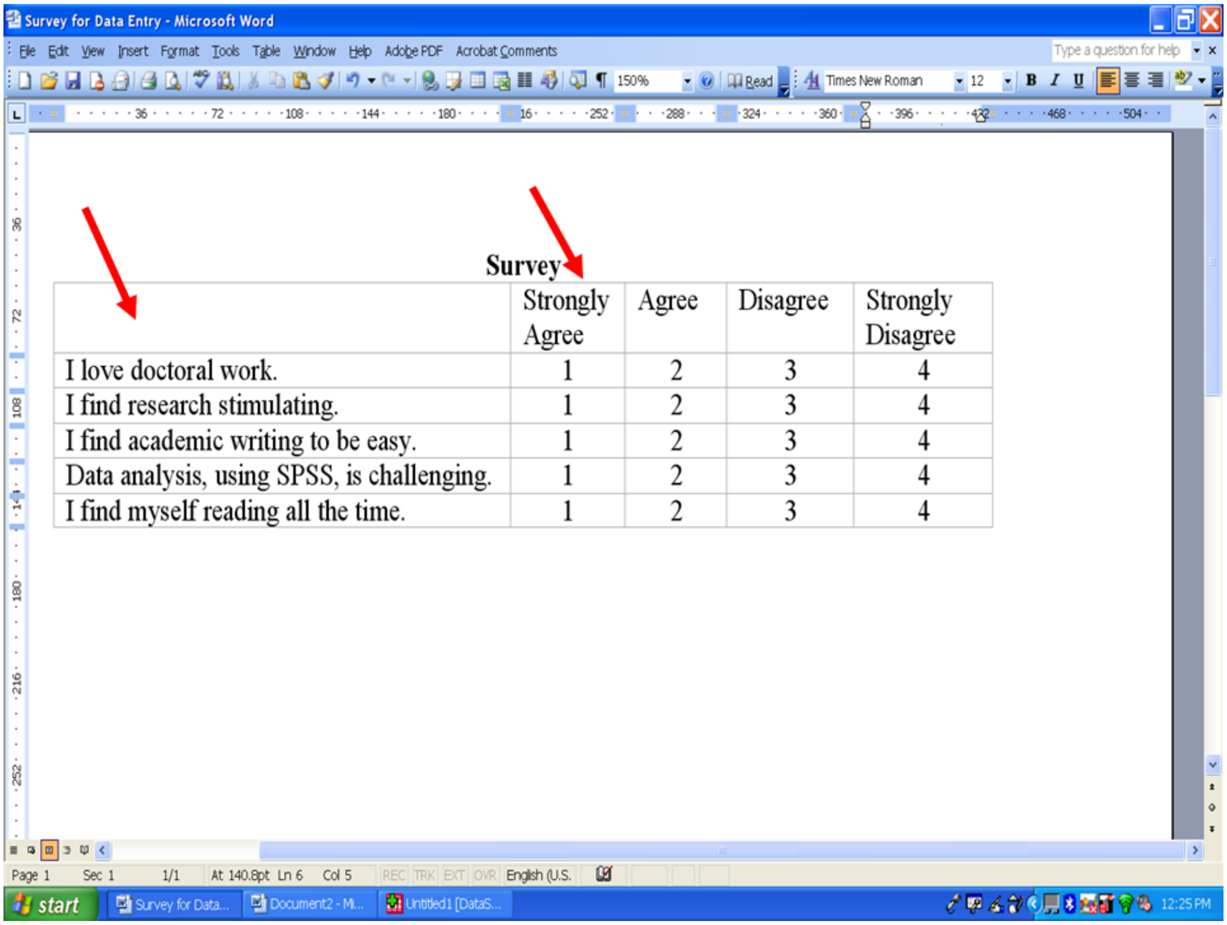
In this chapter, we will show you how to enter data from a survey into SPSS. You can either develop your SPSS data file straight from your survey and then enter in data once your surveys have been completed. Or, you can develop your SPSS data file from your completed surveys. In this set of steps and screenshots, we will assume that you have completed surveys on hand. In our example, we will use the following survey:


Survey for Data Entry - Microsoft Word
File Edit View Insert Format Tools Table Window Help Adobe PDF Acrobat Comments
Type a question for help
150%
Read
Times New Roman
12
Page 1 Sec 1 1/1 At 140.8pt Ln 6 Col 5 REC TRK EXT OVR English (U.S.
start
Survey for Data...
Document2 - M...
Untitled1 [DataS...
12:25 PM

Survey

	Strongly Agree	Agree	Disagree	Strongly Disagree
I love doctoral work.	1	2	3	4
I find research stimulating.	1	2	3	4
I find academic writing to be easy.	1	2	3	4
Data analysis, using SPSS, is challenging.	1	2	3	4
I find myself reading all the time.	1	2	3	4

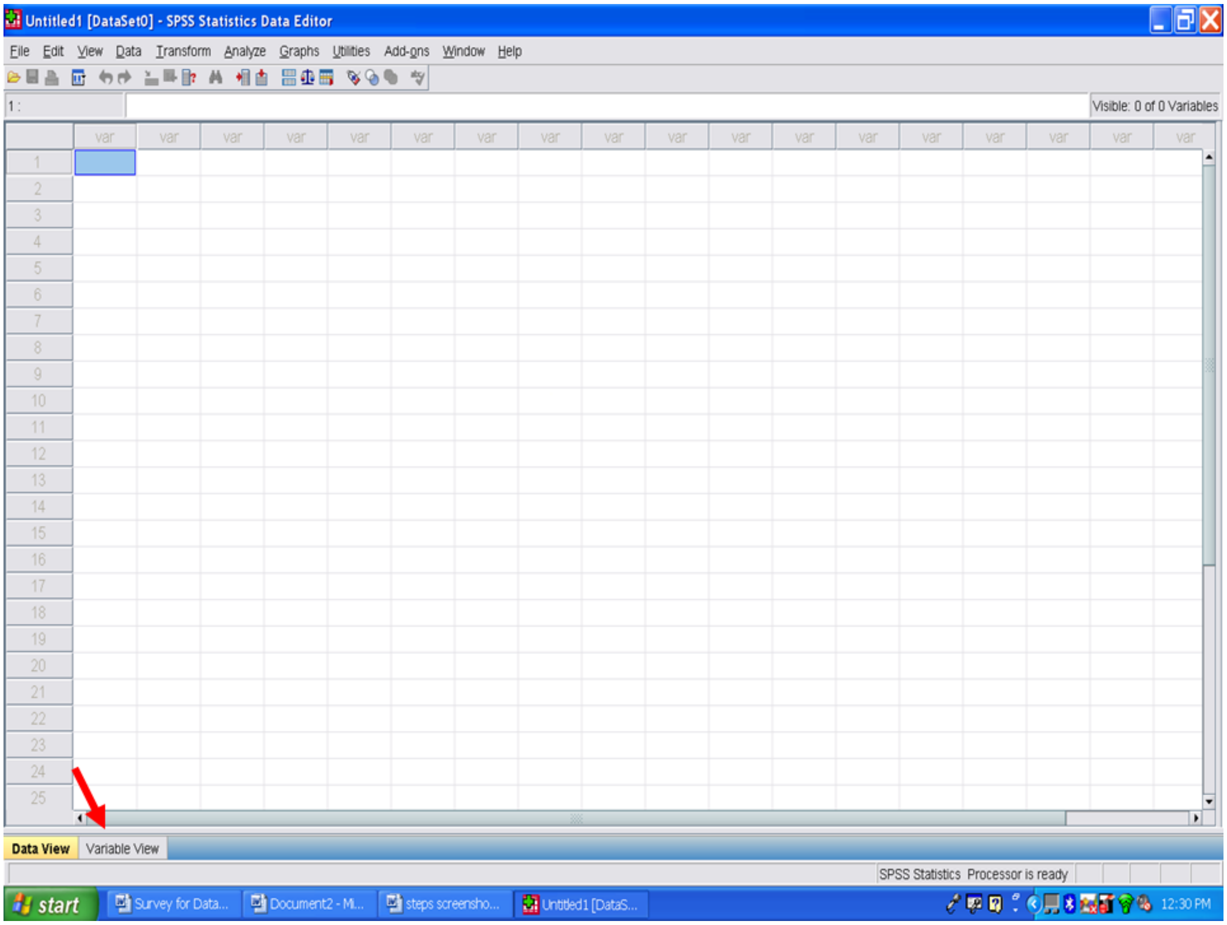
You will note that this survey consists of five items, with a 4-point Likert format. We have assigned a value of 1 to Strongly Agree; a value of 2 to Agree; a value of 3 to Disagree; and a value of 4 to Strongly Disagree. You could, of course, reverse these values so that Strongly Disagree could be a 1.


Survey for Data Entry - Microsoft Word
File Edit View Insert Format Tools Table Window Help Adobe PDF Acrobat Comments
Type a question for help
150%
Read
Times New Roman
12
Page 1 Sec 1 1/1 At 140.8pt Ln 6 Col 5 REC TRK EXT OVR English (U.S.
start
Survey for Data...
Document2 - Mi...
Untitled1 [DataS...
12:25 PM

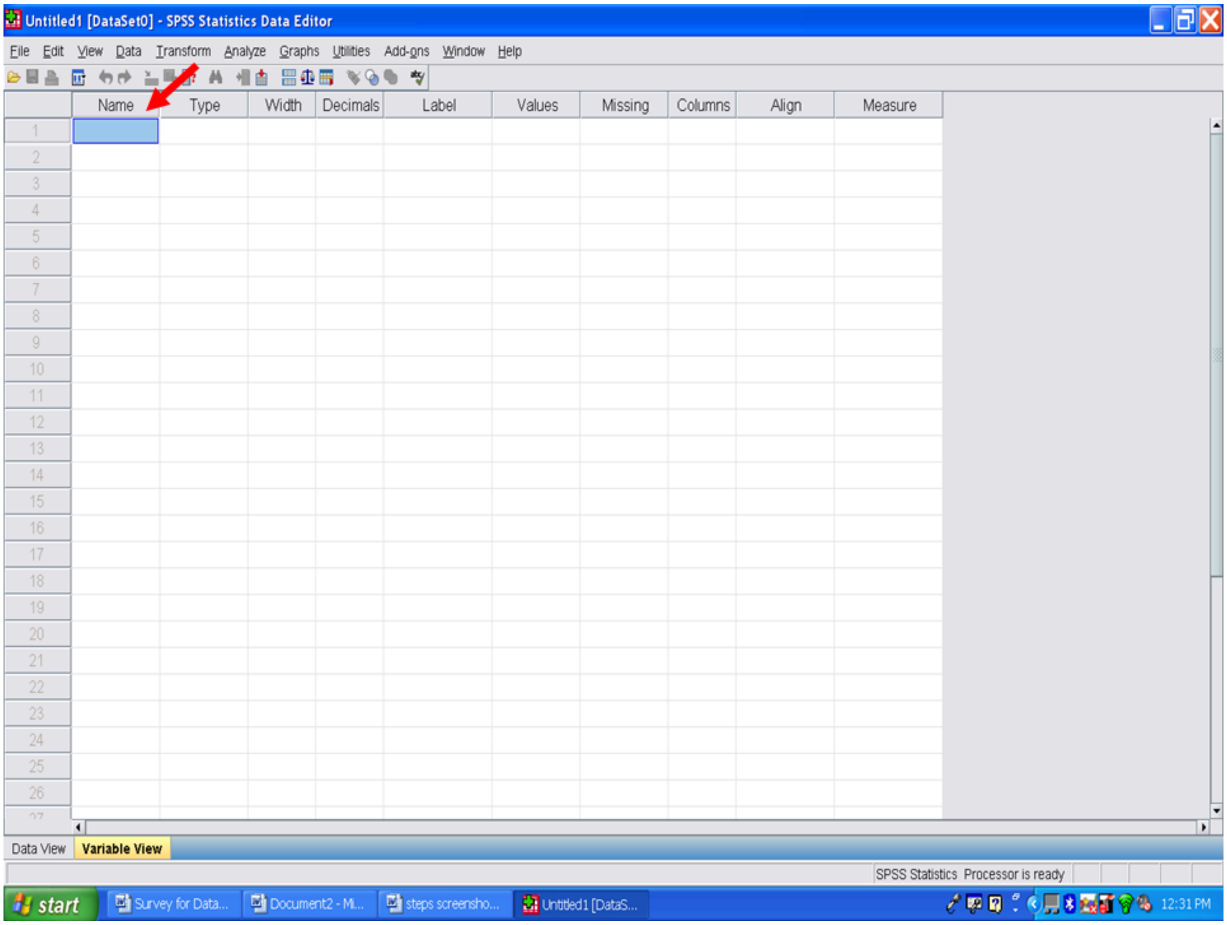
Survey

	Strongly Agree	Agree	Disagree	Strongly Disagree
I love doctoral work.	1	2	3	4
I find research stimulating.	1	2	3	4
I find academic writing to be easy.	1	2	3	4
Data analysis, using SPSS, is challenging.	1	2	3	4
I find myself reading all the time.	1	2	3	4

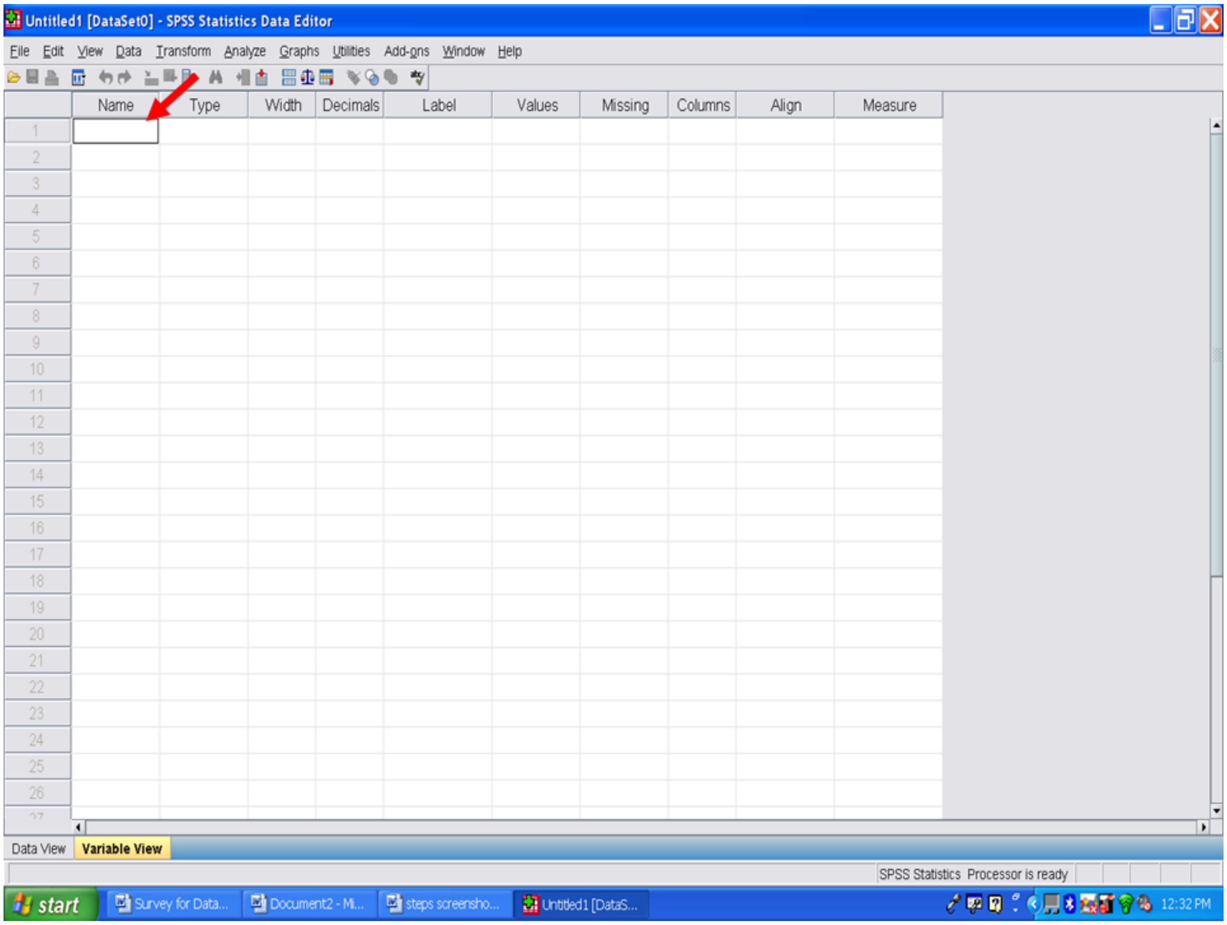
Open up your SPSS so that you have a blank data screen in front of you. Click on the Variable View button at the bottom left of your screen.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 0 of 0 Variables
var
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:30 PM

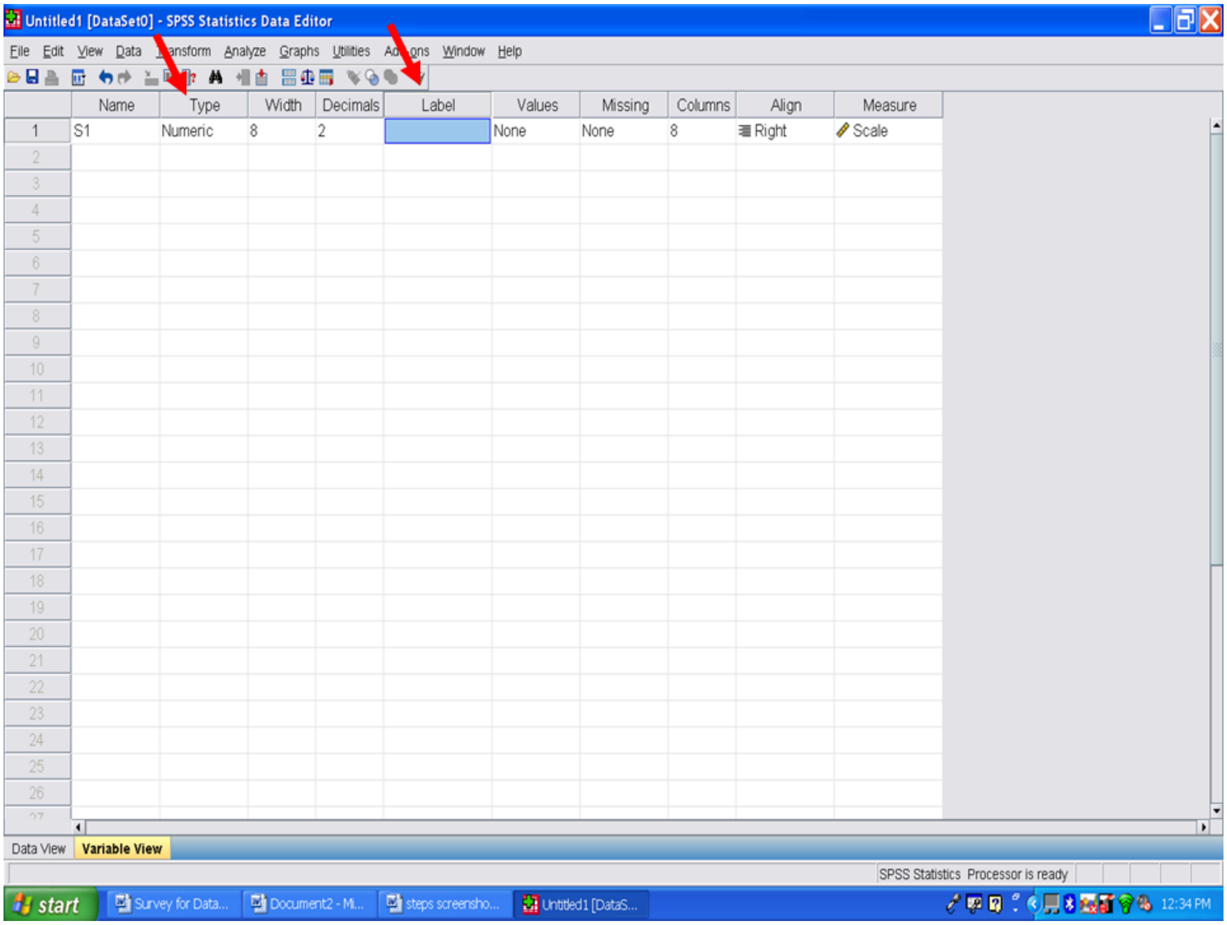
We are now at the screen where we can enter in variable names for our survey items. For simplicity, we will refer to the first Survey Item as S1; the second Survey Item as S2; and so on. We will click in the first cell, row one, under Name.



Doing this permits us to type in S1 for our first Survey Item.

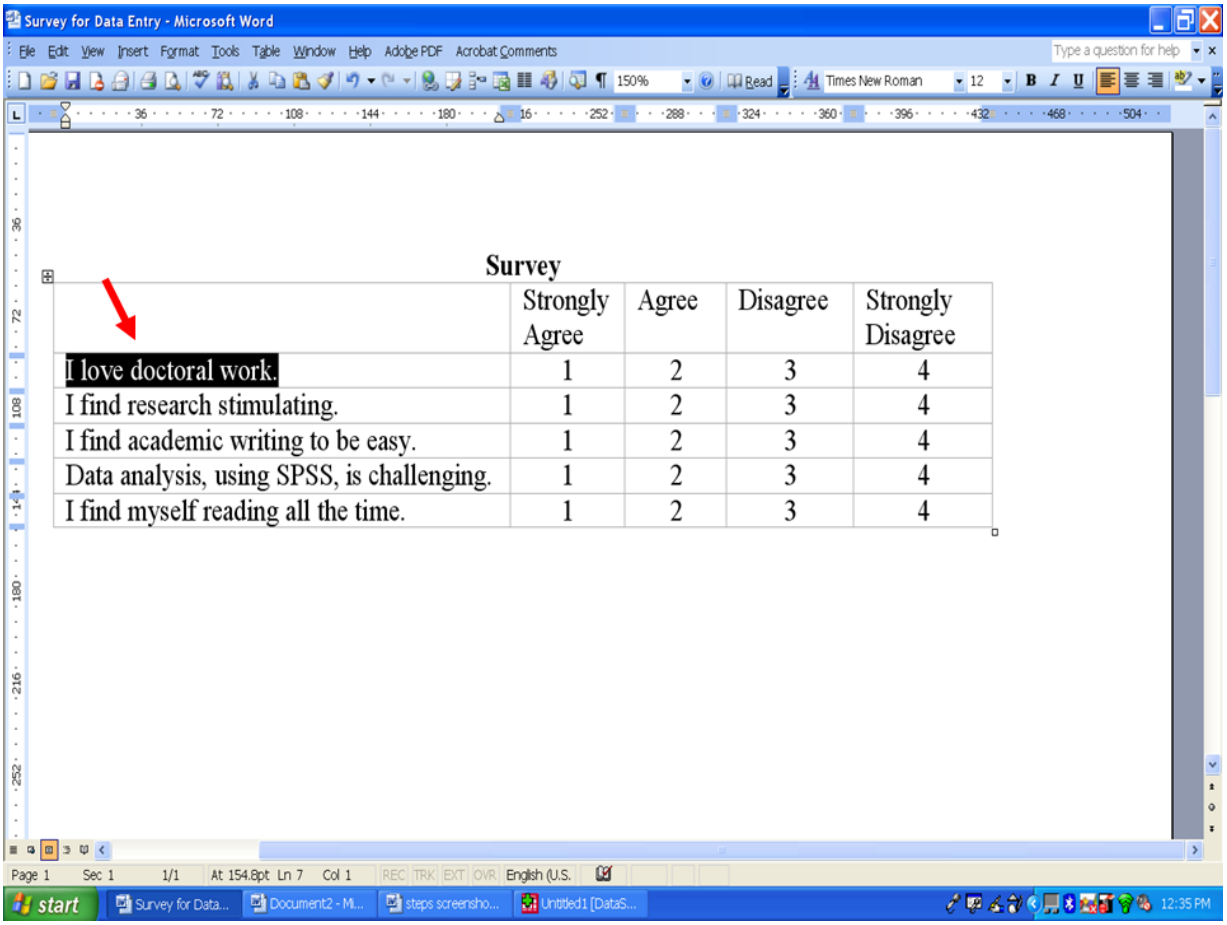

Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Name Type Width Decimals Label Values Missing Columns Align Measure
Data View Variable View
SPSS Statistics Processor is ready
start Survey for Data... Document2 - Mi... steps screensho... Untitled1 [DataS...
12:32 PM

After typing in S1, then move your cursor to the column that reads Label. Once you have typed in S1 and moved your cursor out of that cell, SPSS will fill in the default values for that variable. This variable is a numeric one. In the column marked Label, we will place in the survey item from the Word file.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:34 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2		None	None	8	Right	Scale

If you have the survey in Word format, have your Word file opened and copy the first survey item.


Survey for Data Entry - Microsoft Word
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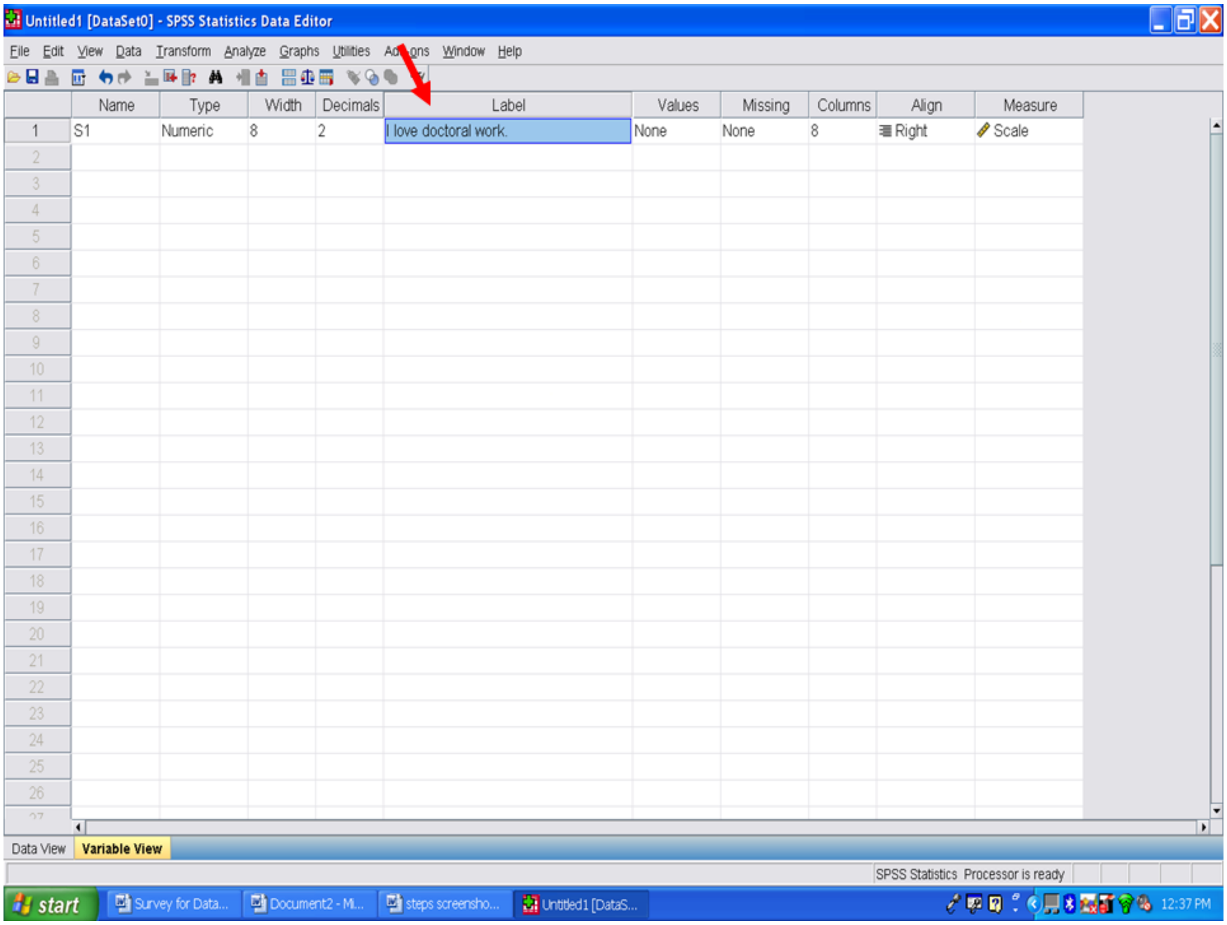
12
Page 1 Sec 1 1/1 At 154.8pt Ln 7 Col 1
English (U.S.
start
Survey for Data...
Document2 - M...
steps screensho...
Untitled1 [DataS...
12:35 PM

Survey

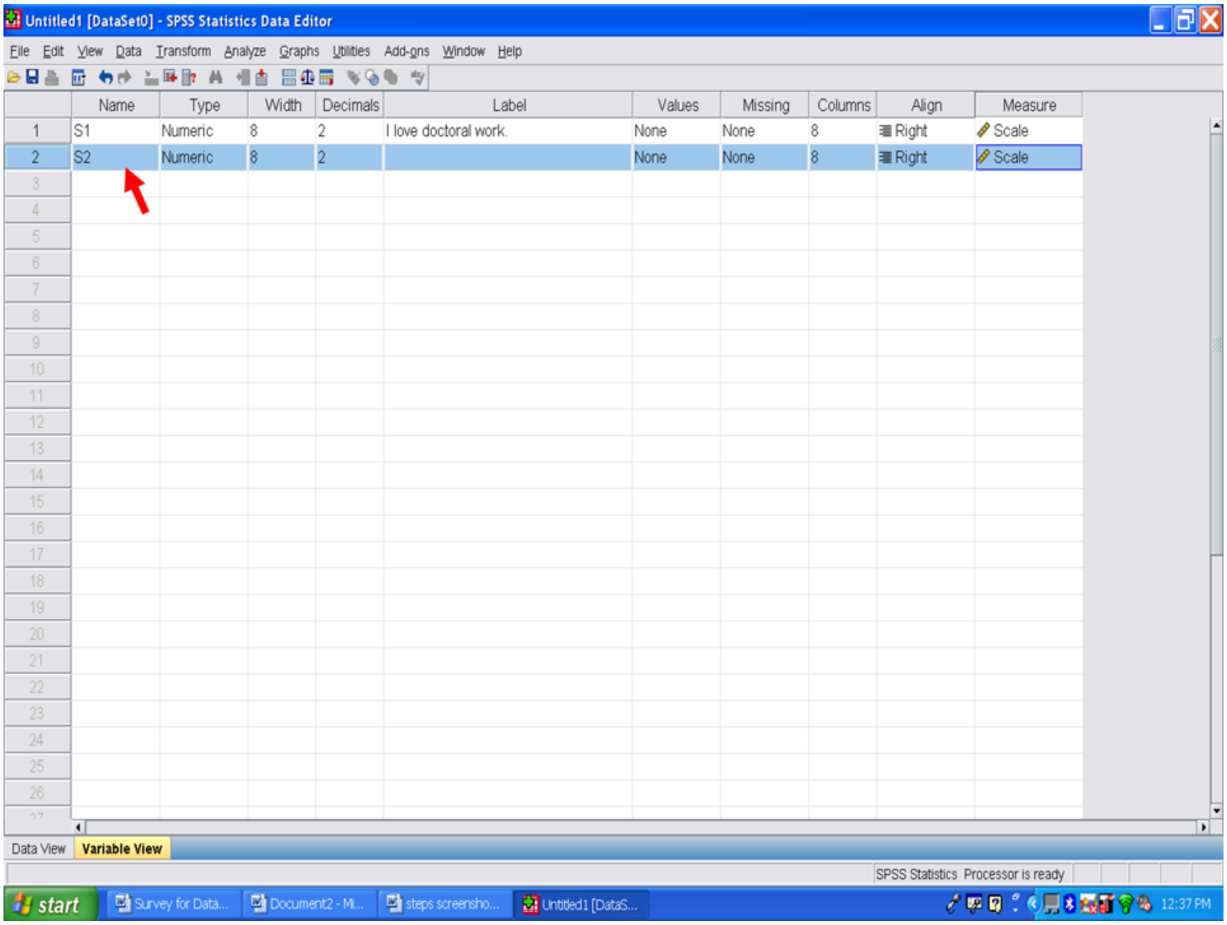
	Strongly Agree	Agree	Disagree	Strongly Disagree
I love doctoral work.	1	2	3	4
I find research stimulating.	1	2	3	4
I find academic writing to be easy.	1	2	3	4
Data analysis, using SPSS, is challenging.	1	2	3	4
I find myself reading all the time.	1	2	3	4

Go back to your SPSS datafile and paste the copied survey item in the Label column, first row.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:37 PM

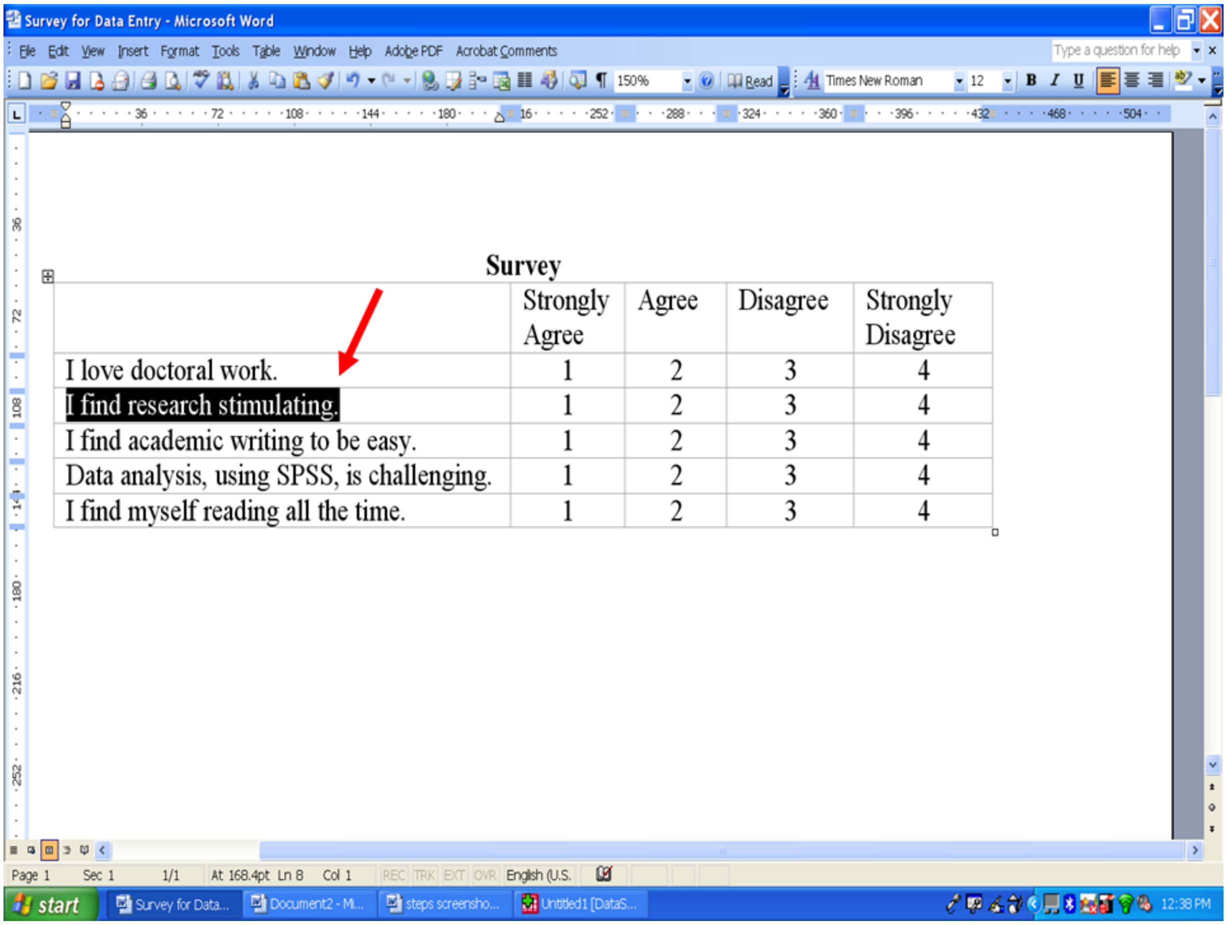
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale

Repeat this process for S2.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:37 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale
2	S2	Numeric	8	2		None	None	8	Right	Scale

Go to your Word file and copy the second survey item.


Survey for Data Entry - Microsoft Word
File Edit View Insert Format Tools Table Window Help Adobe PDF Acrobat Comments
Type a question for help
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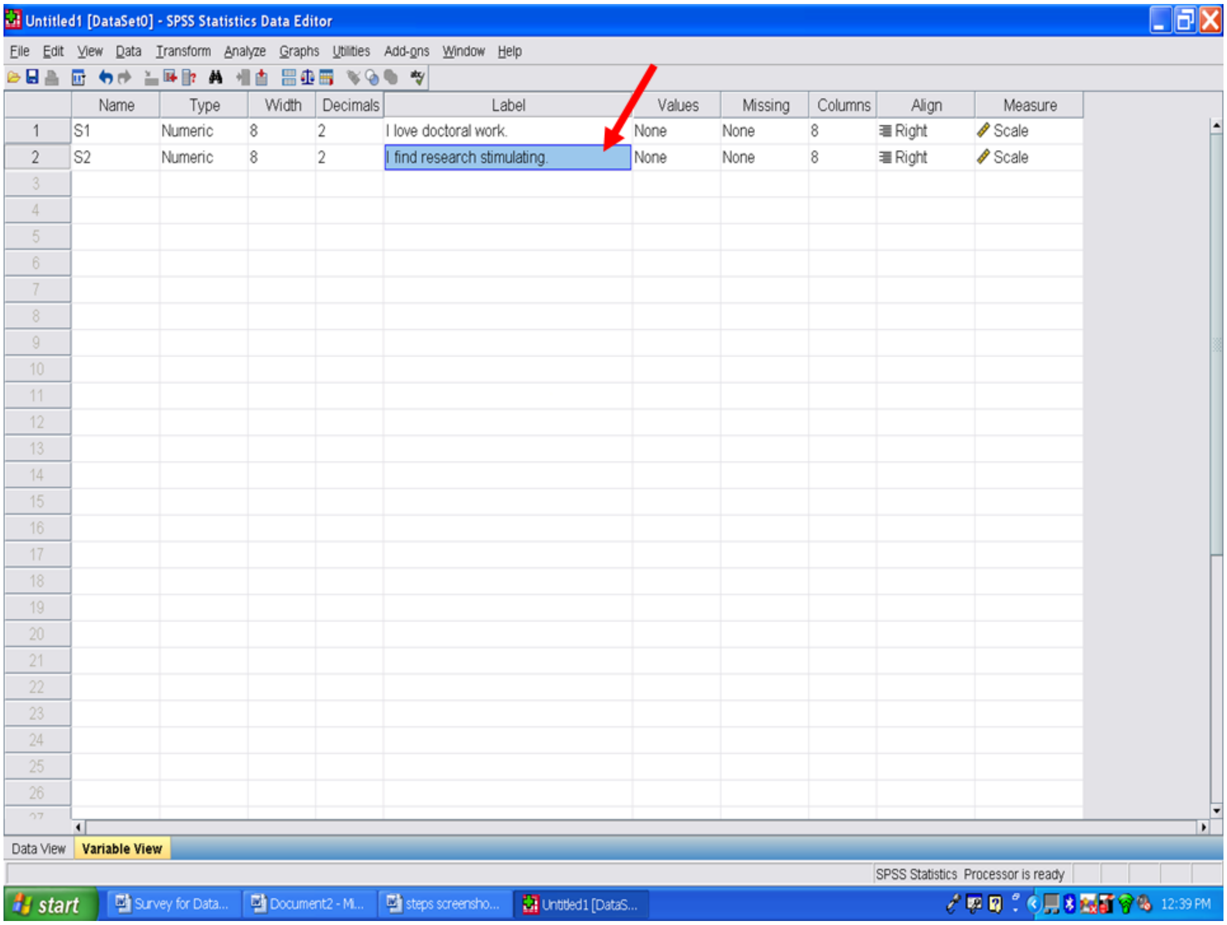
Read
Times New Roman
12
Page 1 Sec 1 1/1 At 168.4pt Ln 8 Col 1 REC TRK EXT OVR English (U.S.
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:38 PM

Survey

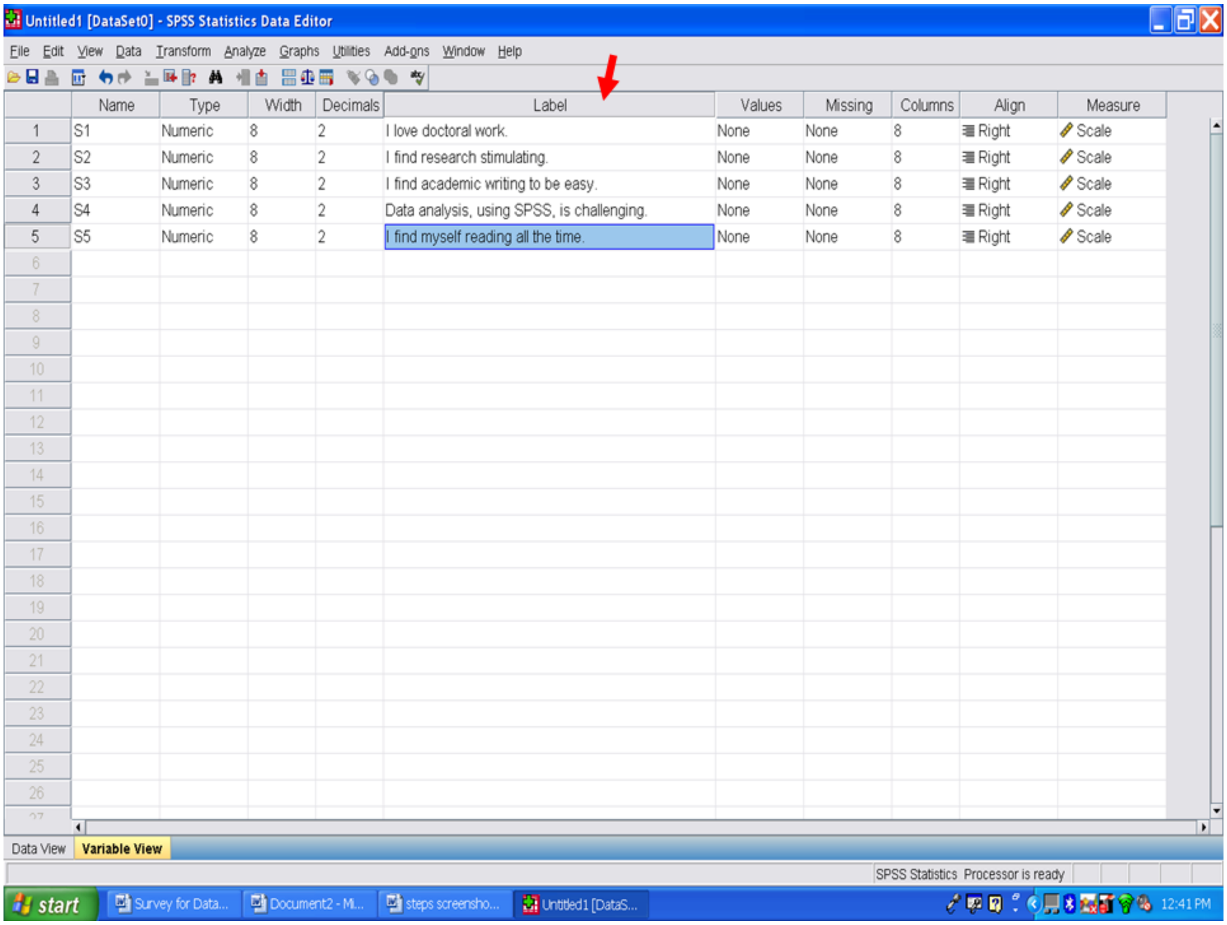
	Strongly Agree	Agree	Disagree	Strongly Disagree
I love doctoral work.	1	2	3	4
I find research stimulating.	1	2	3	4
I find academic writing to be easy.	1	2	3	4
Data analysis, using SPSS, is challenging.	1	2	3	4
I find myself reading all the time.	1	2	3	4

Paste it in the Label column for the second row.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:39 PM

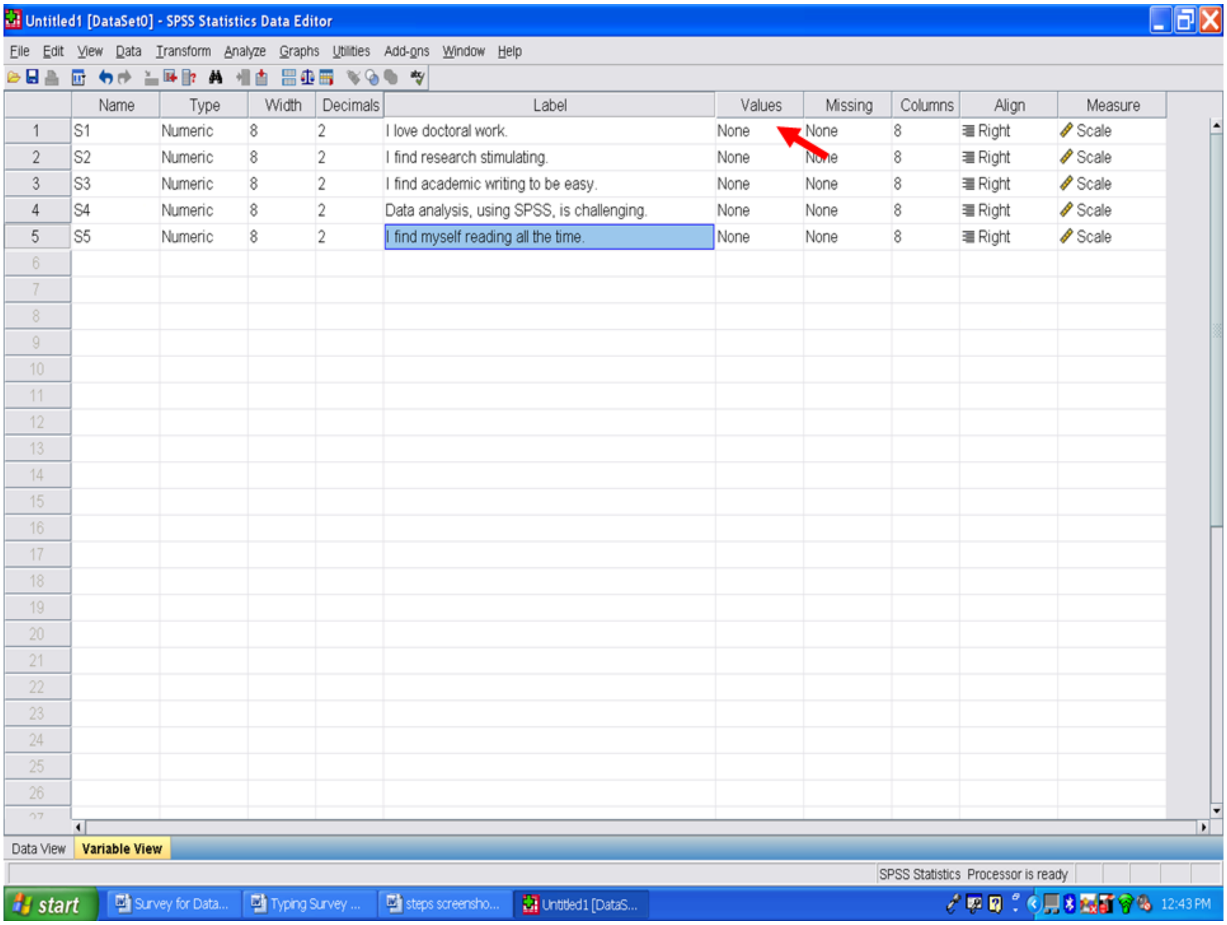
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale

You would repeat the same process for the remaining survey items. After this work, your file would look like the following.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Document2 - Mi...
steps screensho...
Untitled1 [DataS...
12:41 PM

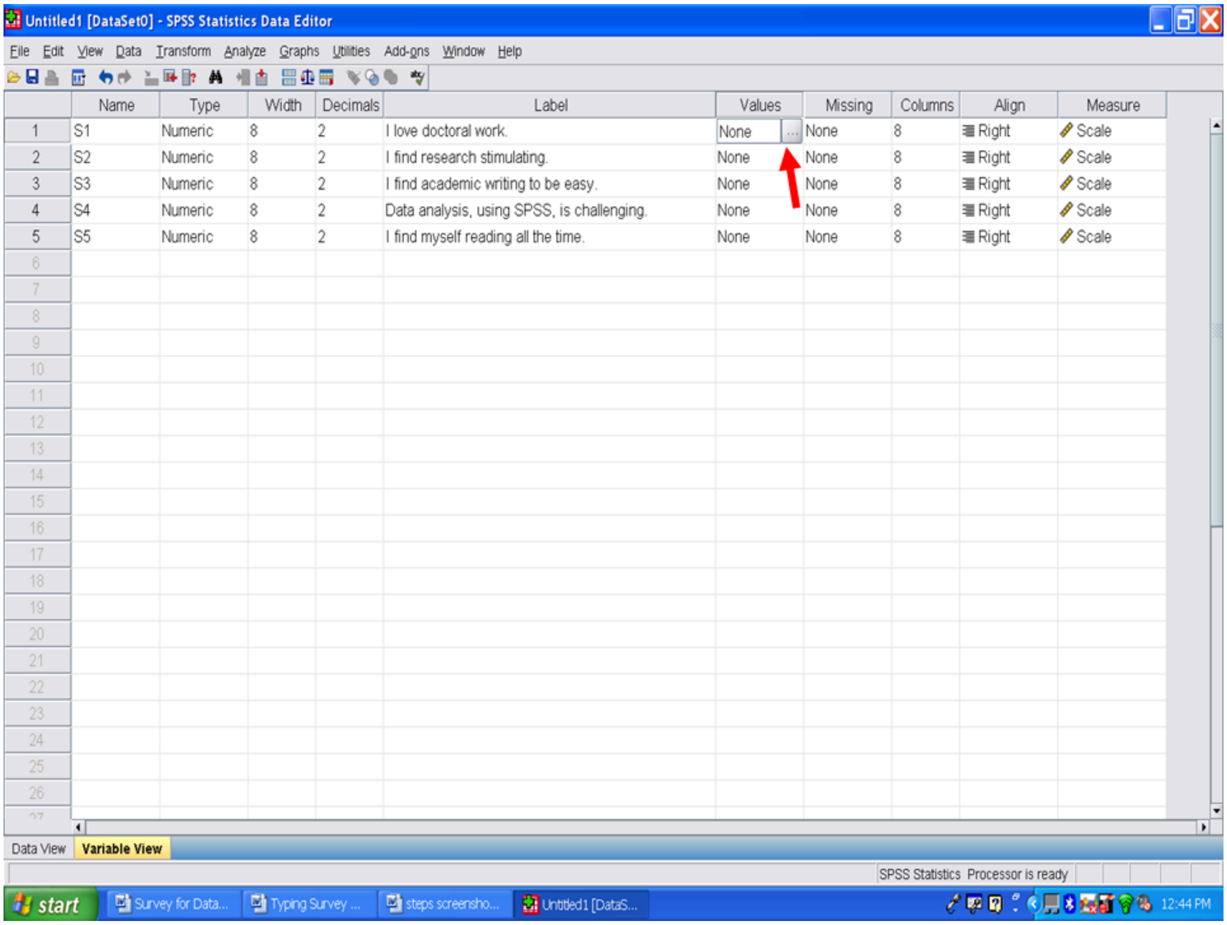
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

Now we need to type in the values for the 4-point Likert scale. To do so, click on the first cell in row one under the column heading, Values. See the arrow below.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:43 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

When you click in this cell, three dots appear. These three dots indicate that a screen is hidden beneath this one. Click on the three dots.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
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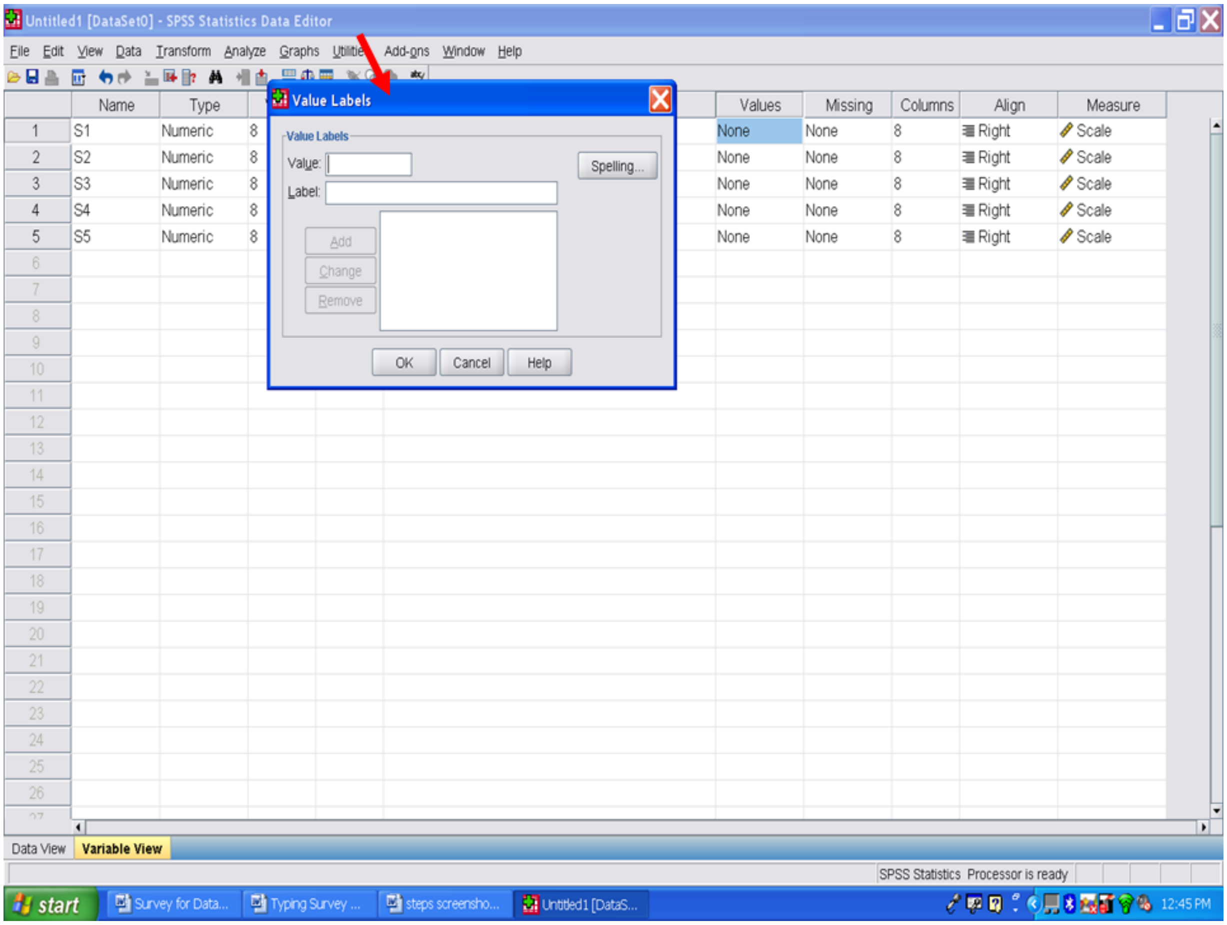
Data View
Variable View
start
Survey for Data...
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:44 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	None	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

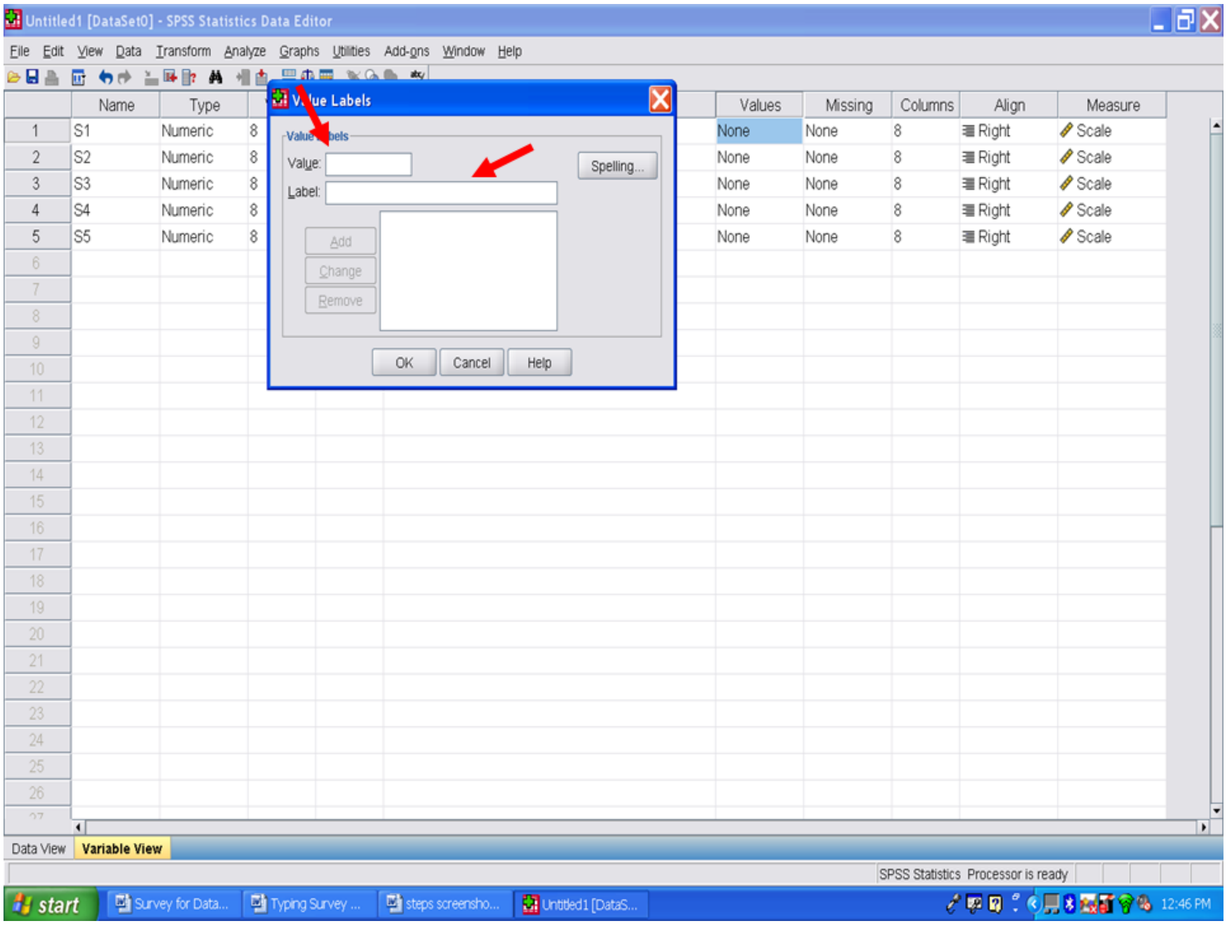
SPSS Statistics Processor is ready

After clicking on the three dots, the following screen will appear.



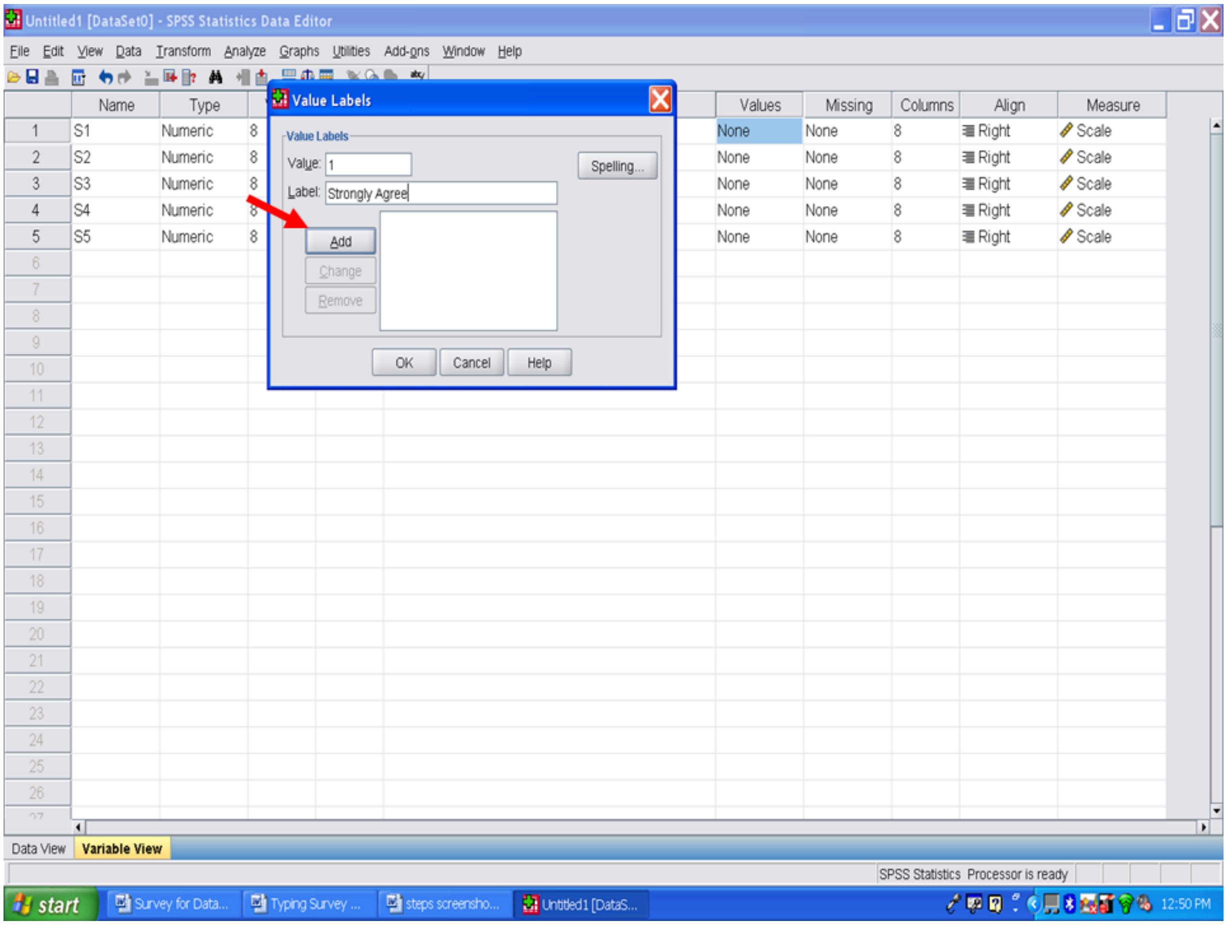
	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

In this screen, we will type in a numeric value in the Value cell and the Likert-format response label in the Label cell. That is, our four values are 1, 2, 3, and 4, which correspond to a Strongly Agree, Agree, Disagree, and Strongly Disagree. Refer back to the survey which we are using for this example.



	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

After typing in a 1 in Value and Strongly Agree in Label, we will now click on Add.

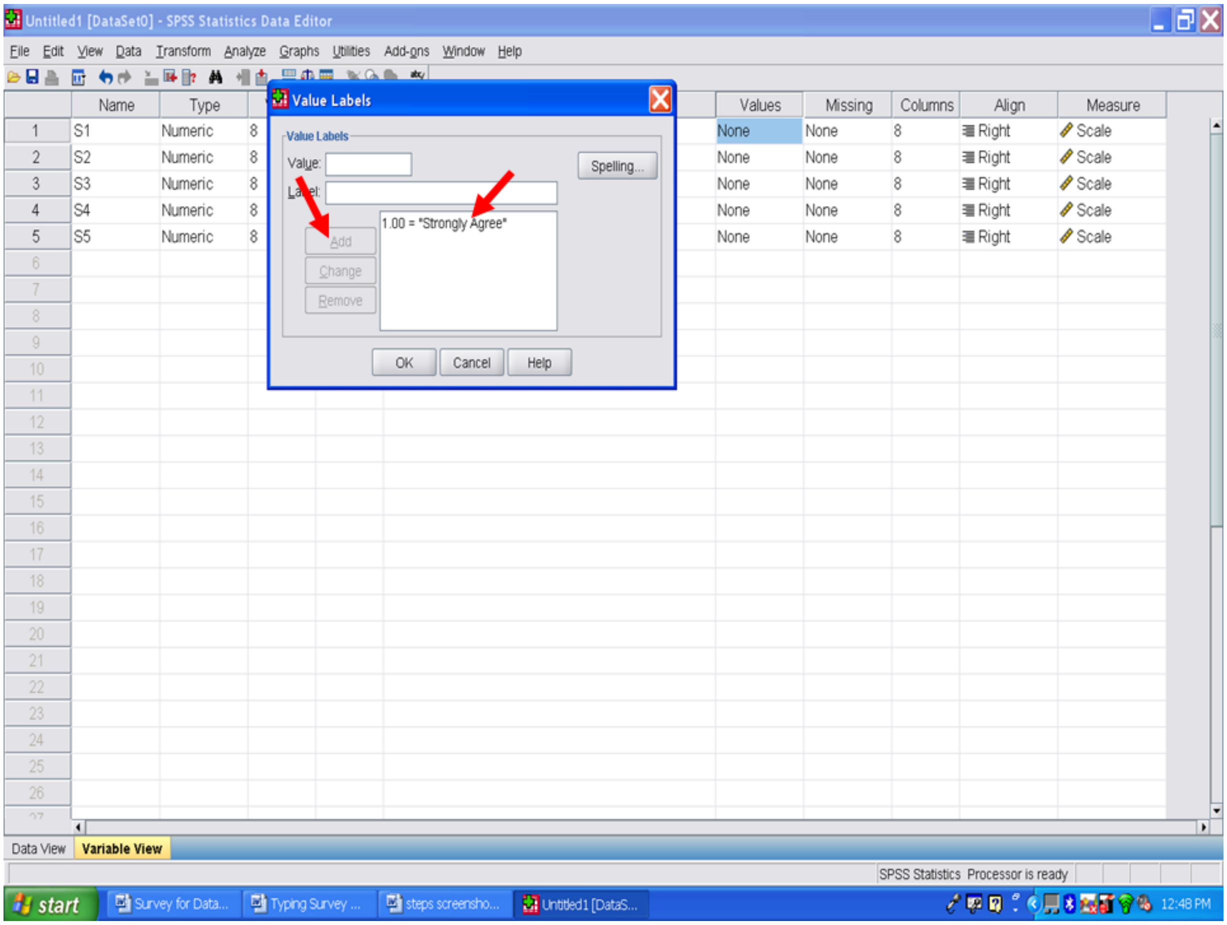


Value: 1

Label: Strongly Agree

	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

After clicking on Add, your screen should look like the one below.

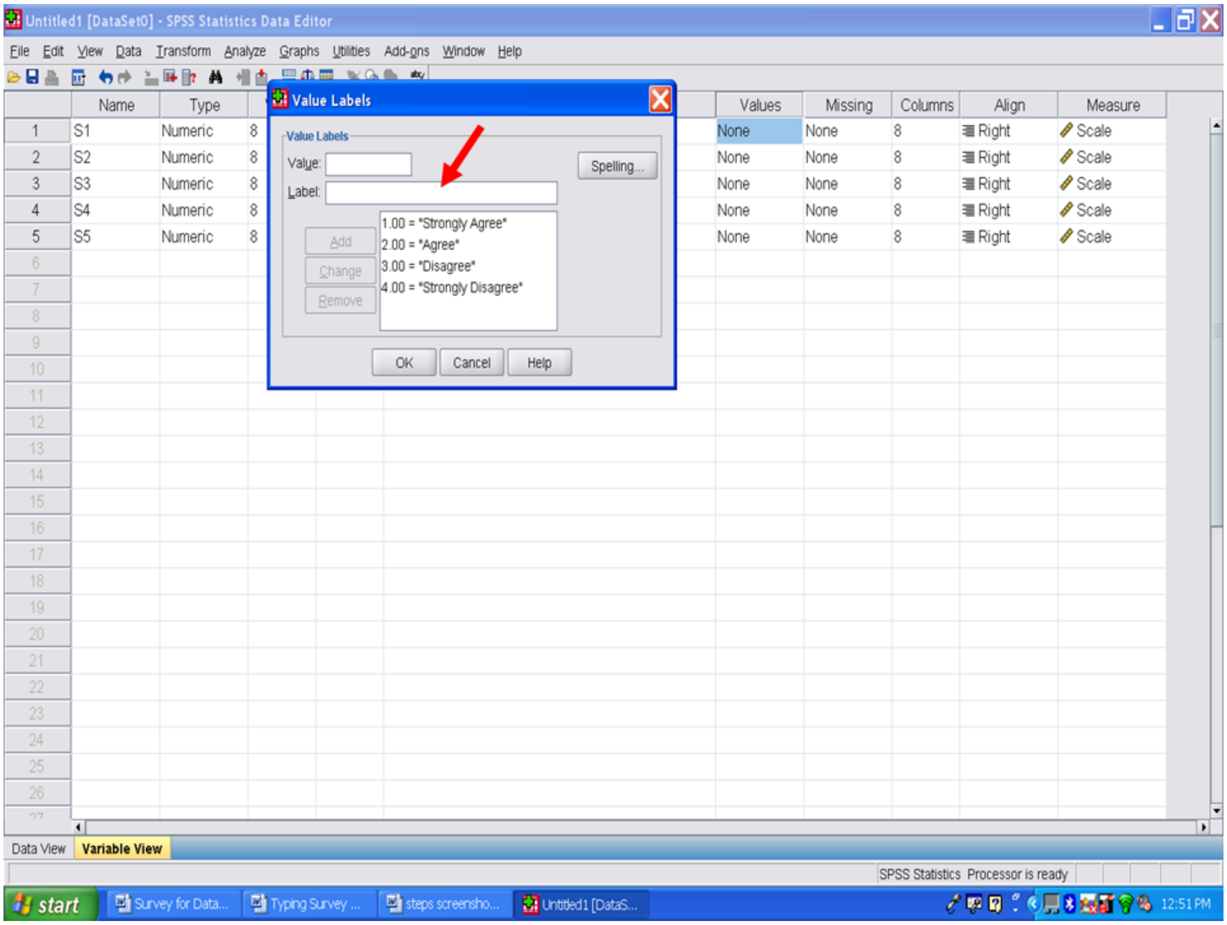


	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

1.00 = "Strongly Agree"

SPSS Statistics Processor is ready

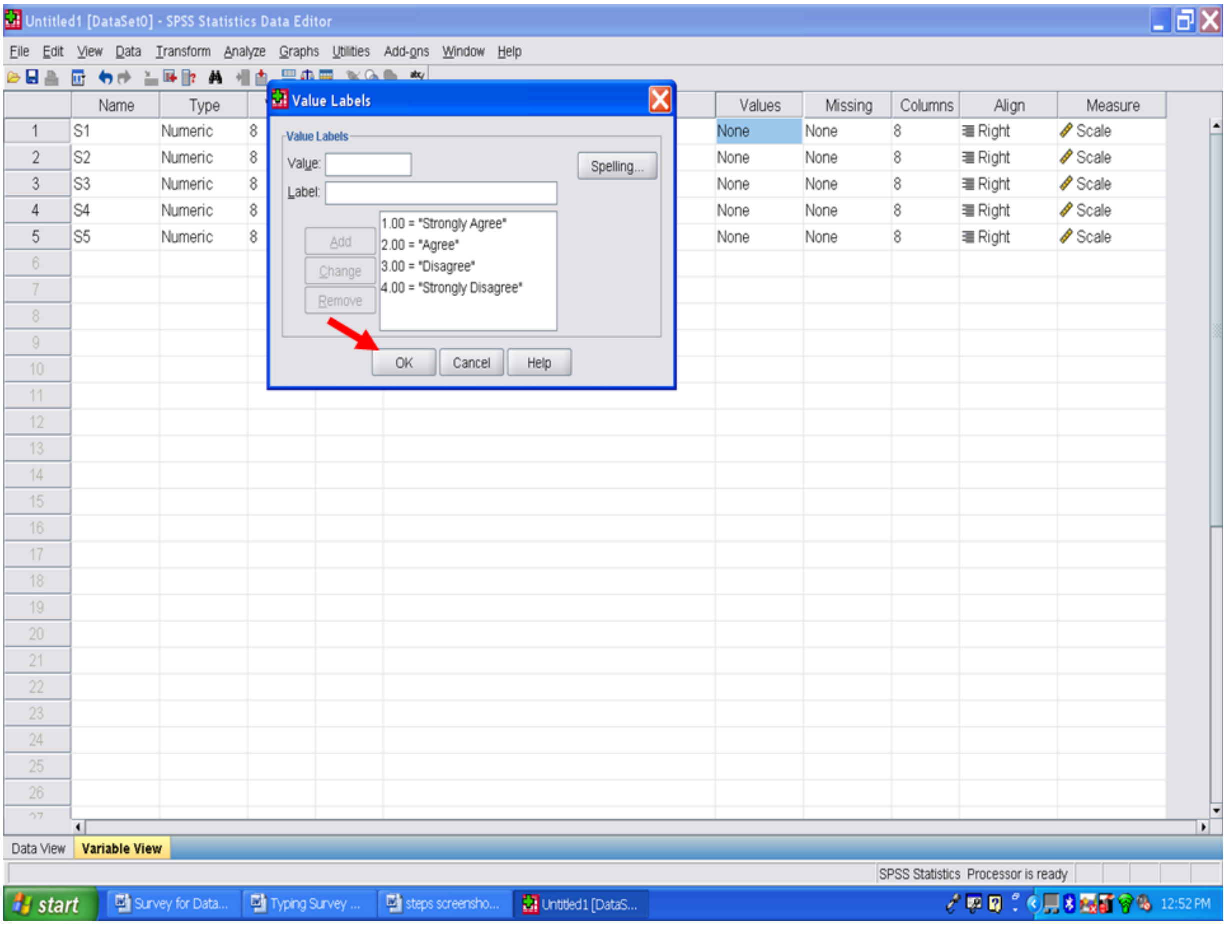
We will repeat this process for 2 Agree; 3 Disagree; and 4 Strongly Disagree. Your screen should look like the one below.



1.00 = "Strongly Agree"
2.00 = "Agree"
3.00 = "Disagree"
4.00 = "Strongly Disagree"

	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

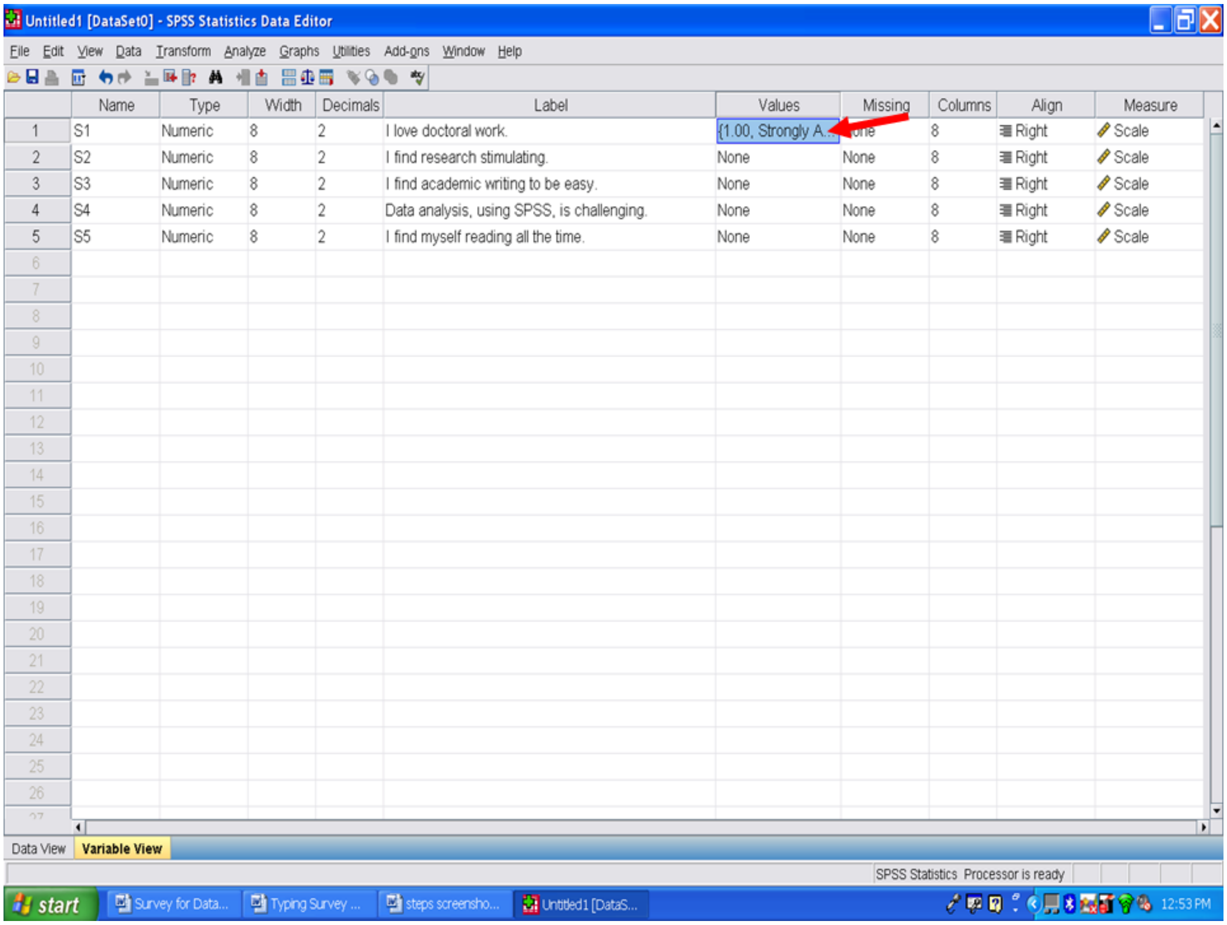
Now click on OK.



1.00 = "Strongly Agree"
2.00 = "Agree"
3.00 = "Disagree"
4.00 = "Strongly Disagree"

	Name	Type		Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	None	None	8	Right	Scale
2	S2	Numeric	8	None	None	8	Right	Scale
3	S3	Numeric	8	None	None	8	Right	Scale
4	S4	Numeric	8	None	None	8	Right	Scale
5	S5	Numeric	8	None	None	8	Right	Scale

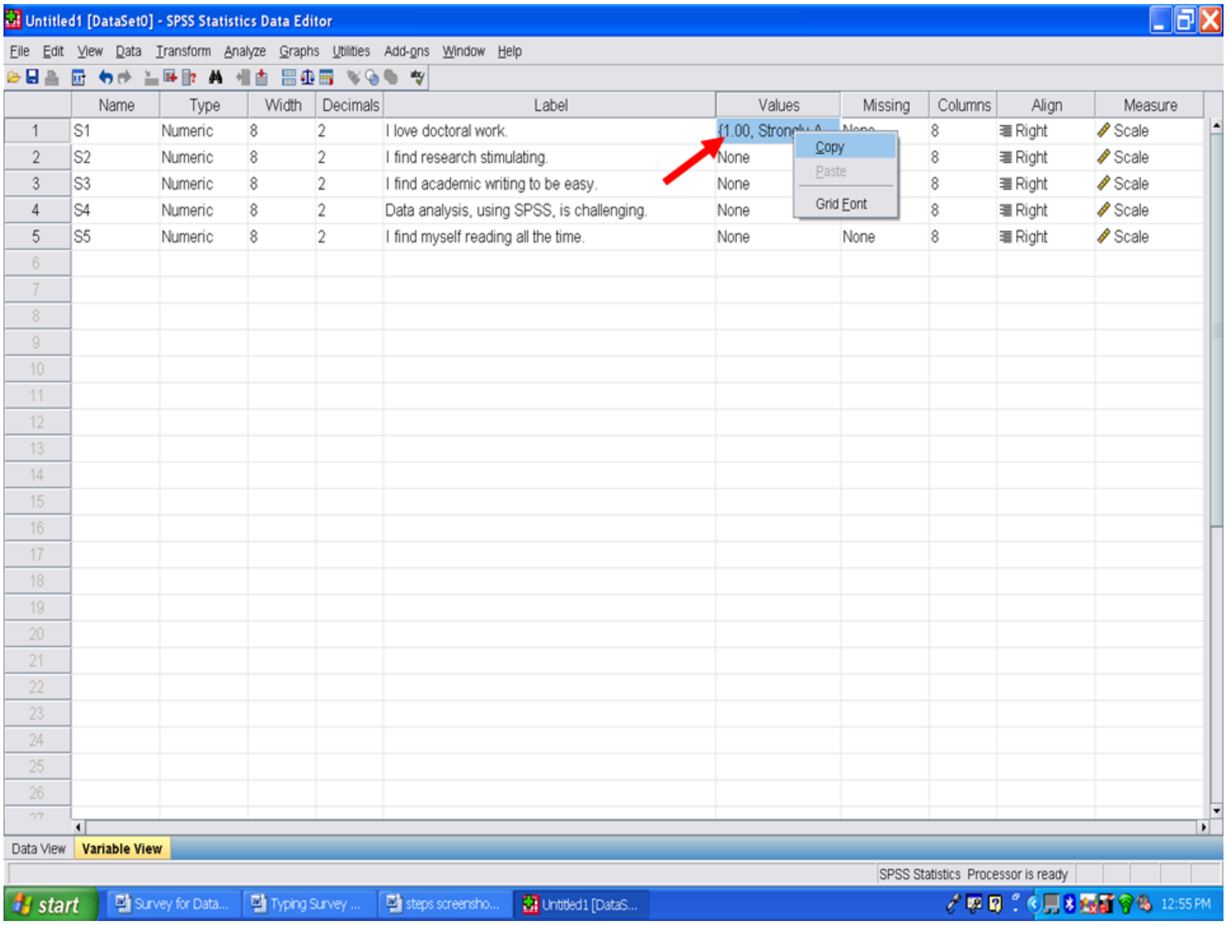
Your screen should now look like the following one. The 4-point Likert scale has been successfully entered for the first survey item. Now we will copy it and paste it one at a time for the other four survey items.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:53 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	{1.00, Strongly A...	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

Right mouse click on the cell that you just completed.

Copy.

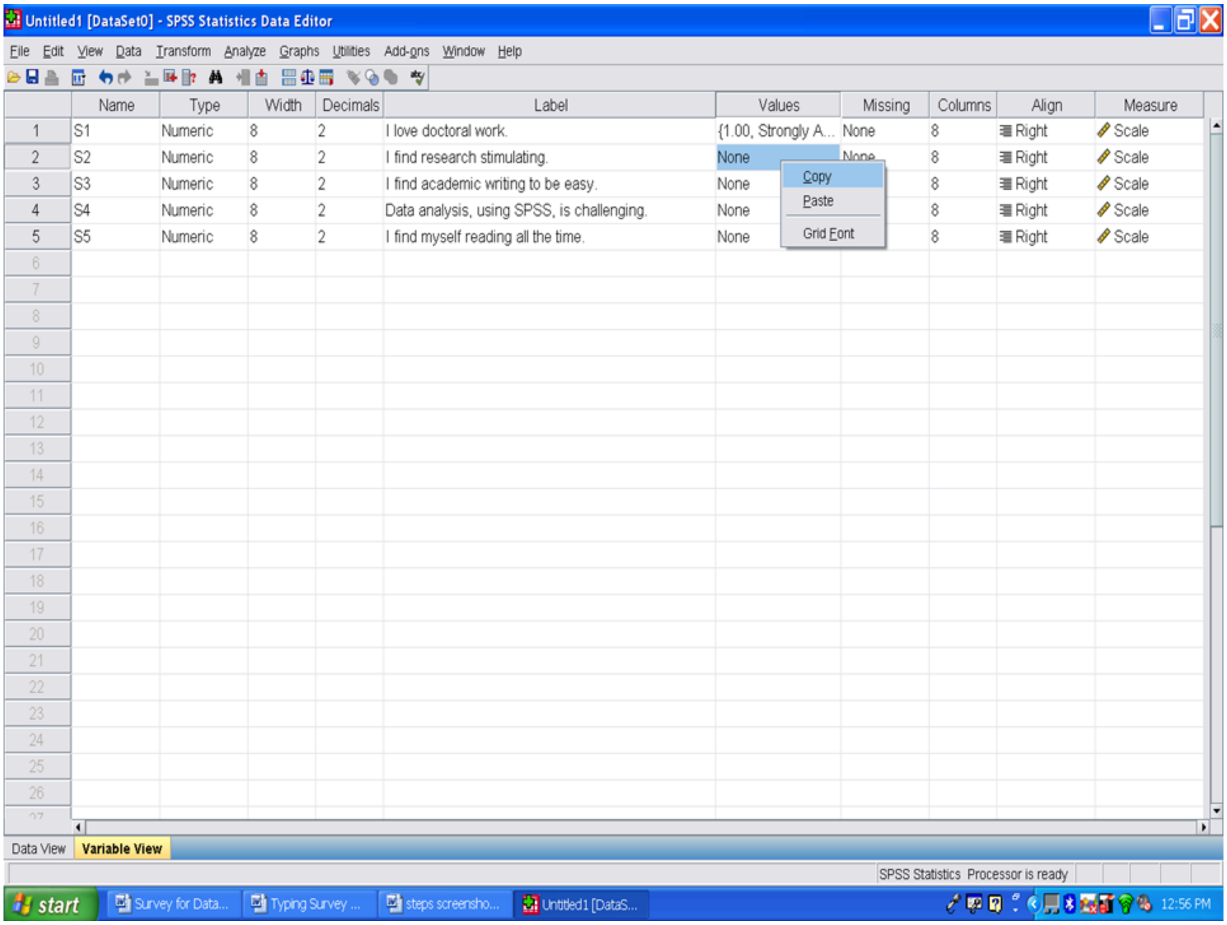


	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	{1.00, Strongly A...	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None		8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None		8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None		8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

SPSS Statistics Processor is ready

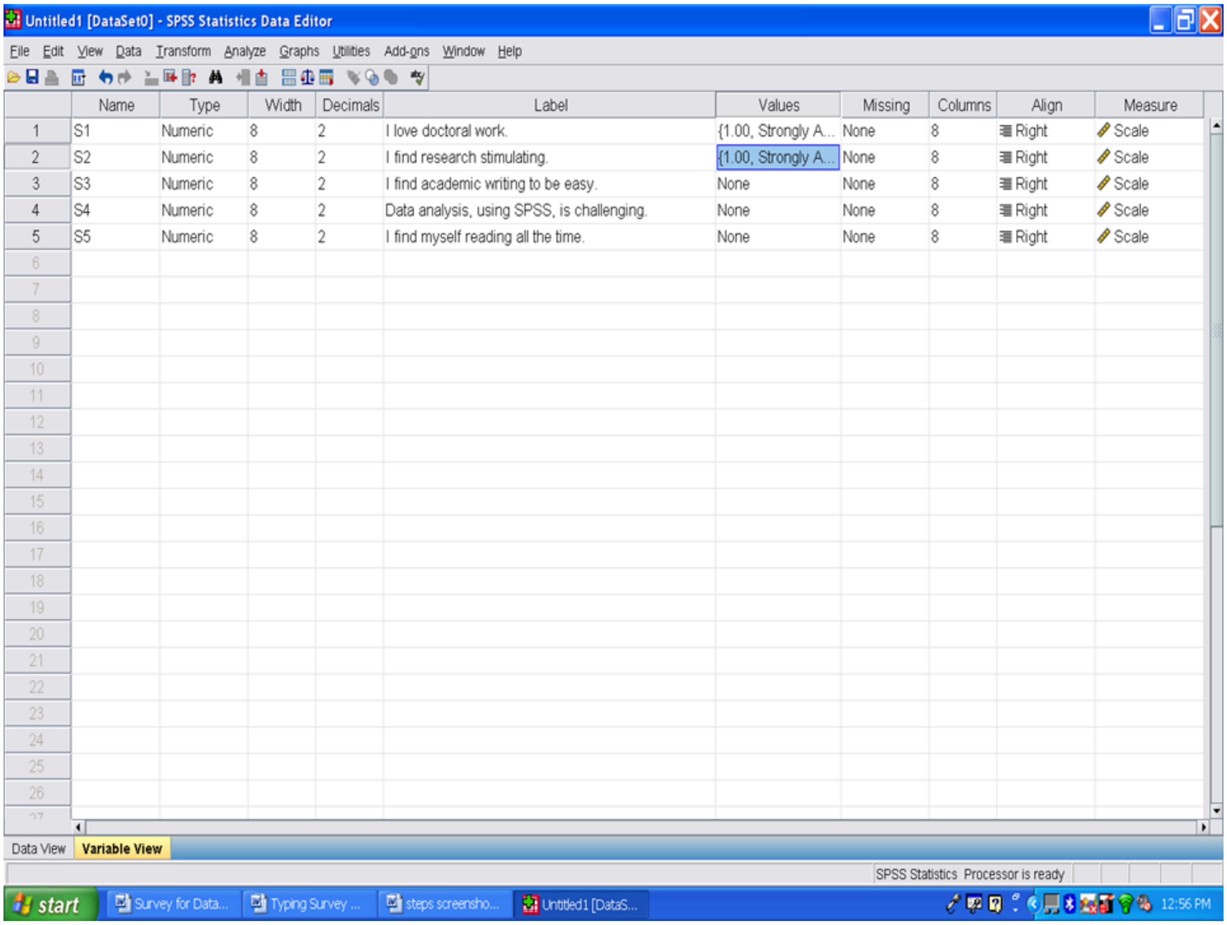
Move to the second cell in the Label column.

Paste.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Copy
Paste
Grid Font
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:56 PM

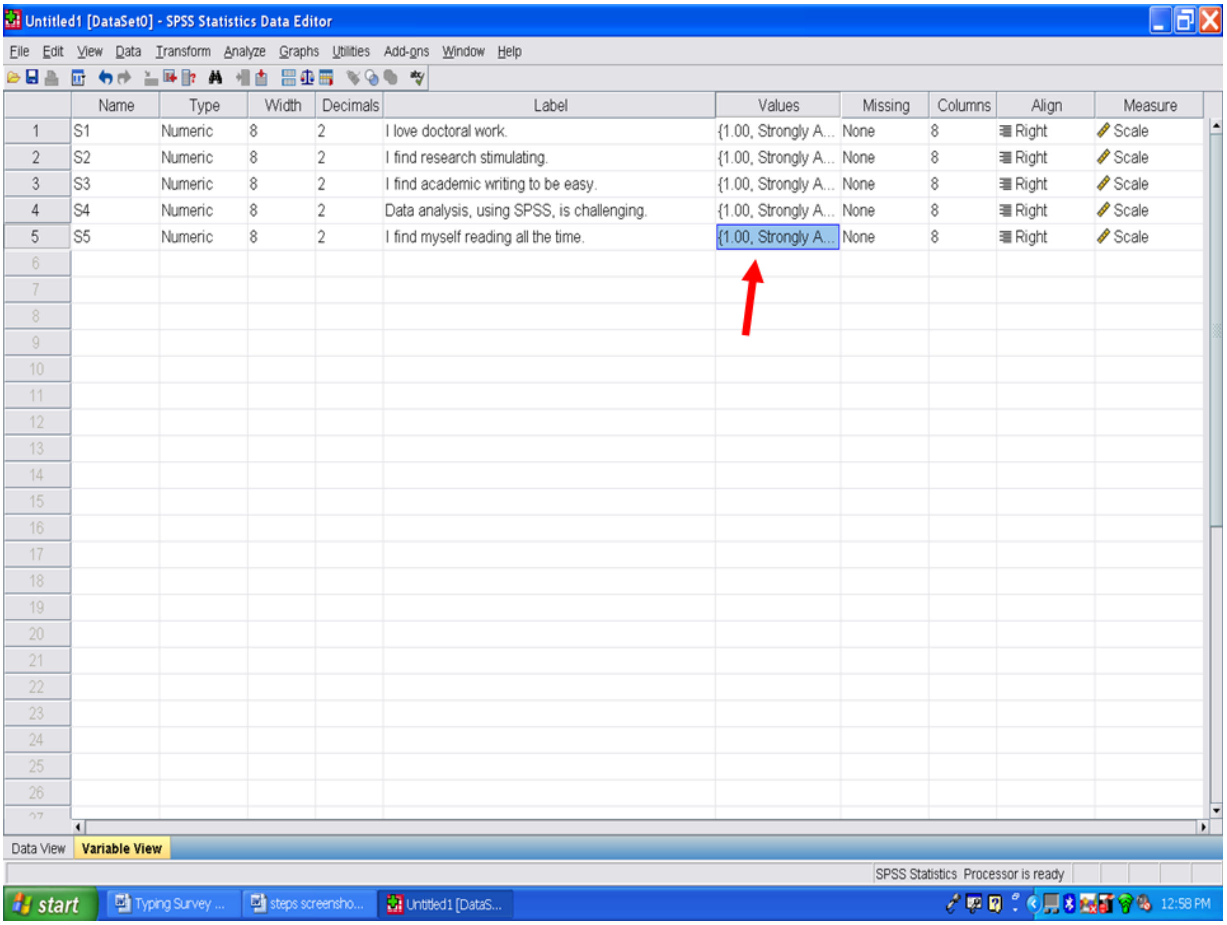
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	{1.00, Strongly A...	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	None	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None		8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None		8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None		8	Right	Scale

Your screen will now have that cell filled in with the same information that you typed in for survey item one. Repeat this paste process for survey items 3, 4, and 5.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Survey for Data...
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:56 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	{1.00, Strongly A...	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	{1.00, Strongly A...	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	None	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	None	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	None	None	8	Right	Scale

Your screen will now look like the following one. All of your survey items are present and typed out in the Label column. All of the numeric values for participants’ responses are labeled in the Values column. Remember to save your file.


Untitled1 [DataSet0] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
SPSS Statistics Processor is ready
start
Typing Survey ...
steps screensho...
Untitled1 [DataS...
12:58 PM

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	S1	Numeric	8	2	I love doctoral work.	{1.00, Strongly A...	None	8	Right	Scale
2	S2	Numeric	8	2	I find research stimulating.	{1.00, Strongly A...	None	8	Right	Scale
3	S3	Numeric	8	2	I find academic writing to be easy.	{1.00, Strongly A...	None	8	Right	Scale
4	S4	Numeric	8	2	Data analysis, using SPSS, is challenging.	{1.00, Strongly A...	None	8	Right	Scale
5	S5	Numeric	8	2	I find myself reading all the time.	{1.00, Strongly A...	None	8	Right	Scale

You have now successfully created a SPSS dataset for your survey.

Internal Consistency Analysis: Part I

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

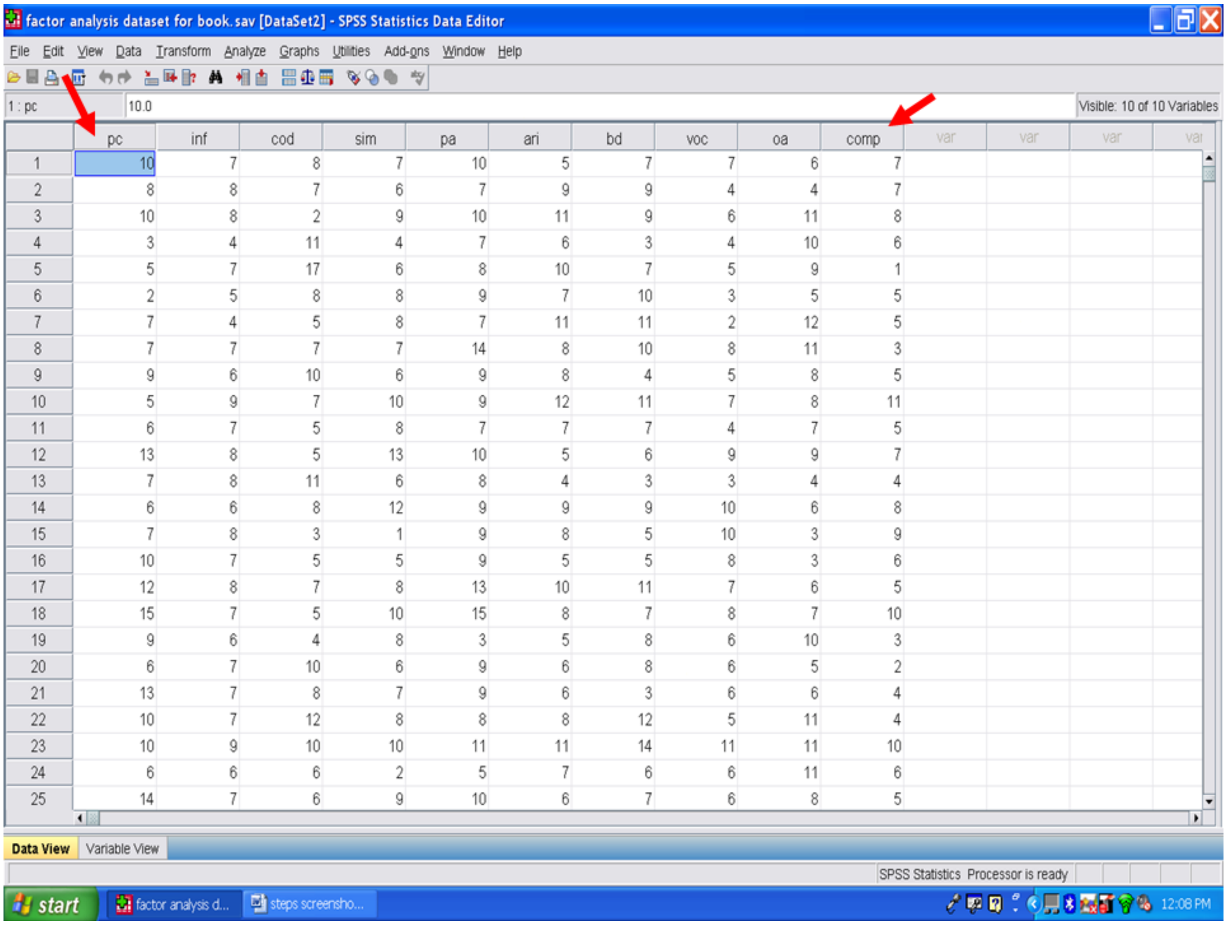
About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

In this set of steps and screenshots, you will be presented with information regarding how to determine the internal consistency (i.e., reliability) of scores derived from a larger set of variables. In particular, this chapter follows up on the factor analysis chapter. The subscales that were determined to constitute Factor 1 and the subscales that were determined to comprise Factor 2 will be the variables used in this chapter to ascertain the extent to which they constitute internally consistent factors. For more detailed information regarding internal consistency analysis, readers are referred to the Hyperstats Online Statistics Textbook at http://davidmlane.com/hyperstat/ ; to the *Electronic Statistics Textbook* **(2011) at http://www.statsoft.com/textbook/ ; or to Andy Field's (2009) Discovering Statistics Using SPSS at http://www.amazon.com/Discovering-Statistics-Introducing-Statistical-Method/dp/1847879071/ref=sr_1_1?s=books&ie=UTF8&qid=1304967862&sr=1-1**

Conducting an internal consistency analysis is usually part of a set of statistical analyses. Its purpose is to determine score reliability and not to determine whether groups differ on some variable. As such, internal consistency analysis precedes the use of inferential statistical procedures.

Have your data set pulled into SPSS-PC. In this data set, we have the same 10 subscales used in the factor analysis chapter.

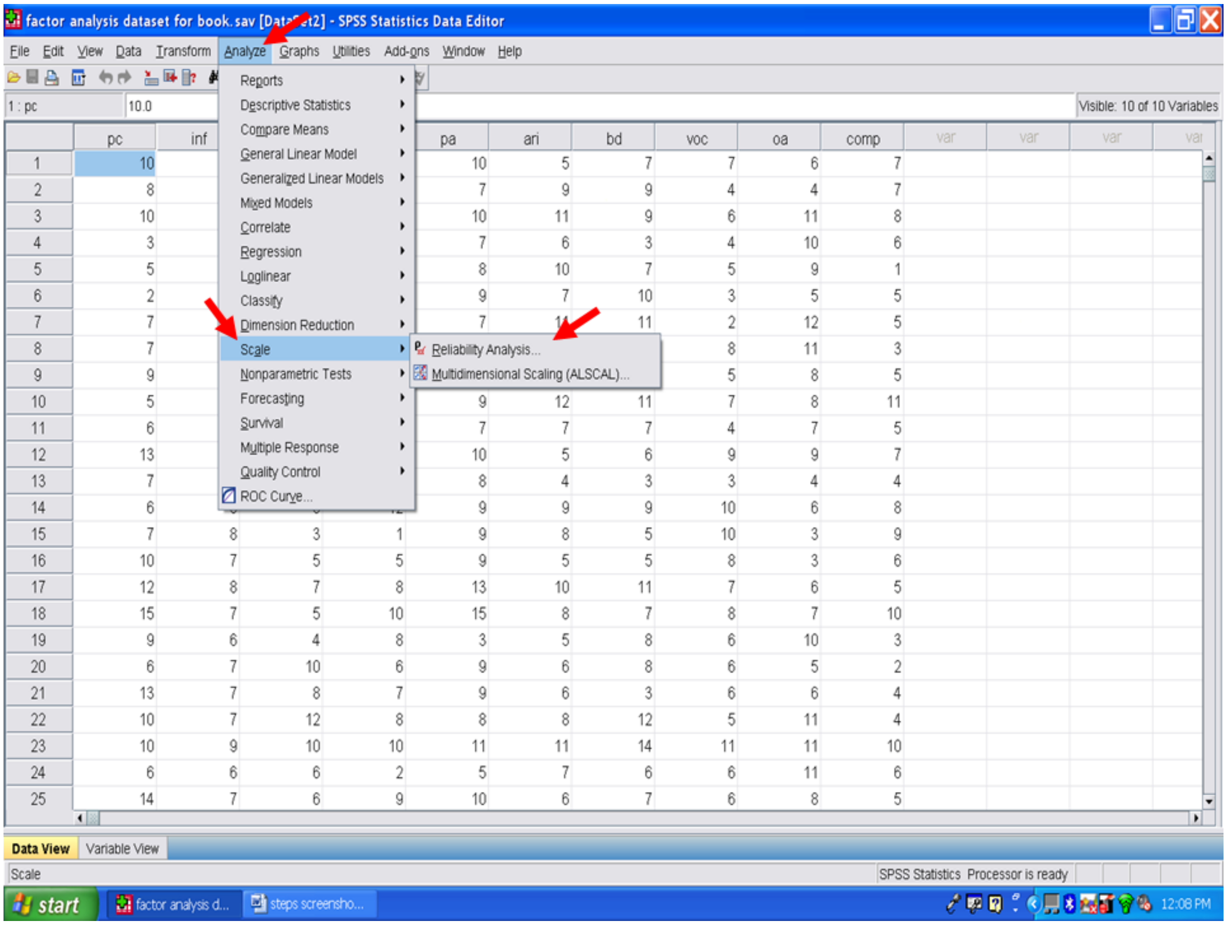

factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
Visible: 10 of 10 Variables
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
steps screensho...
12:08 PM

	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp	var	var	var	var
1	10	7	8	7	10	5	7	7	6	7				
2	8	8	7	6	7	9	9	4	4	7				
3	10	8	2	9	10	11	9	6	11	8				
4	3	4	11	4	7	6	3	4	10	6				
5	5	7	17	6	8	10	7	5	9	1				
6	2	5	8	8	9	7	10	3	5	5				
7	7	4	5	8	7	11	11	2	12	5				
8	7	7	7	7	14	8	10	8	11	3				
9	9	6	10	6	9	8	4	5	8	5				
10	5	9	7	10	9	12	11	7	8	11				
11	6	7	5	8	7	7	7	4	7	5				
12	13	8	5	13	10	5	6	9	9	7				
13	7	8	11	6	8	4	3	3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

Click on Analyze

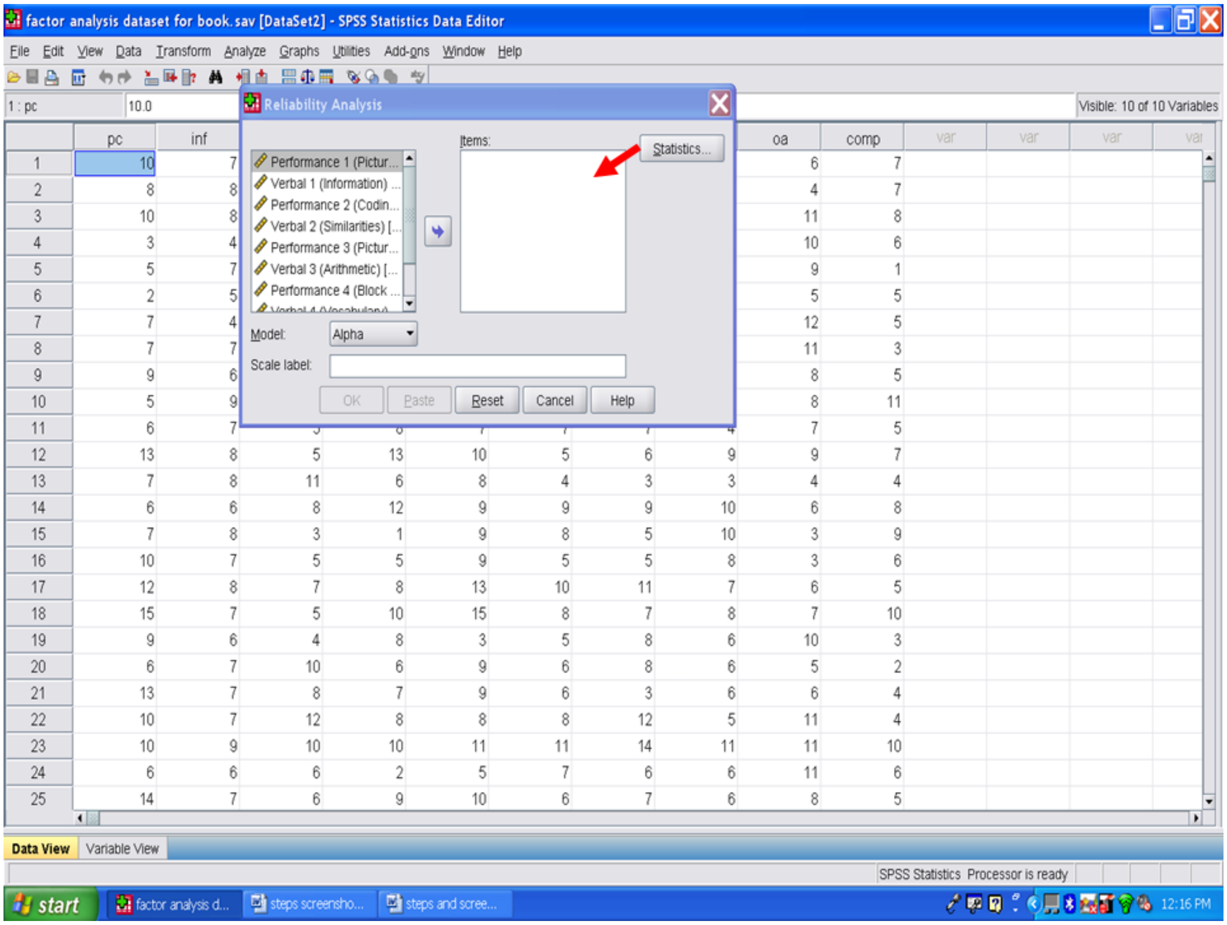
Click on Scale

Click on Reliability Analysis



	pc	inf			pa	ari	bd	voc	oa	comp
1	10				10	5	7	7	6	7
2	8				7	9	9	4	4	7
3	10				10	11	9	6	11	8
4	3				7	6	3	4	10	6
5	5				8	10	7	5	9	1
6	2				9	7	10	3	5	5
7	7				7	[illegible]	11	2	12	5
8	7							8	11	3
9	9							5	8	5
10	5				9	12	11	7	8	11
11	6				7	7	7	4	7	5
12	13				10	5	6	9	9	7
13	7				8	4	3	3	4	4
14	6				9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

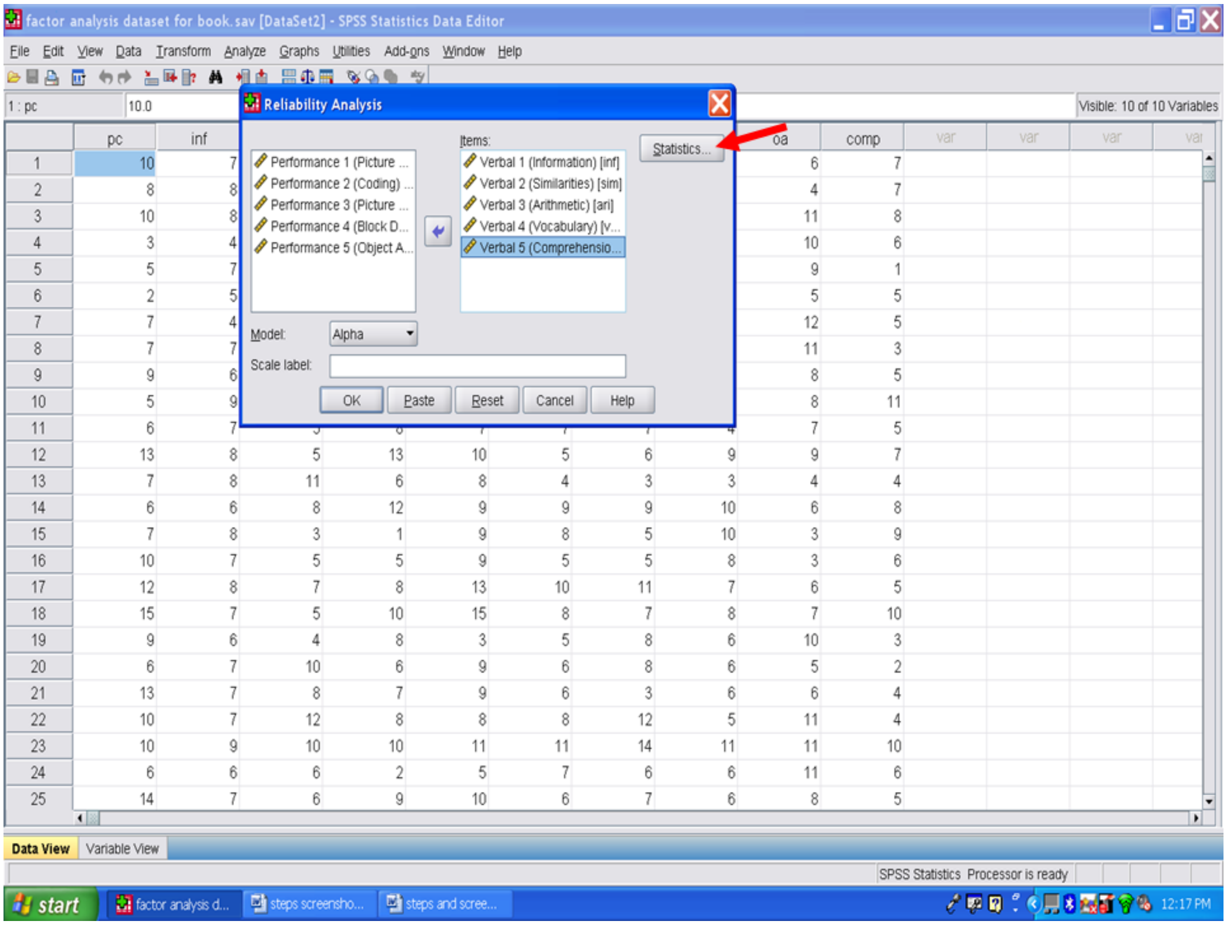
Using the information from the chapter on factor analysis, we want to determine the internal consistency of: Verbal 1 (Information), Verbal 2 (Similarities), Verbal 3 (Arithmetic), Verbal 4 (Vocabulary), and Verbal 5 (Comprehension). Click on each of these variables and send each to the box labeled Items.



	pc	inf							oa	comp
1	10	7							6	7
2	8	8							4	7
3	10	8							11	8
4	3	4							10	6
5	5	7							9	1
6	2	5							5	5
7	7	4							12	5
8	7	7							11	3
9	9	6							8	5
10	5	9							8	11
11	6	7							7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

Now your screen should look like the one below.

Click on Statistics.



Reliability Analysis

Performance 1 (Picture ...
Performance 2 (Coding) ...
Performance 3 (Picture ...
Performance 4 (Block D...
Performance 5 (Object A...

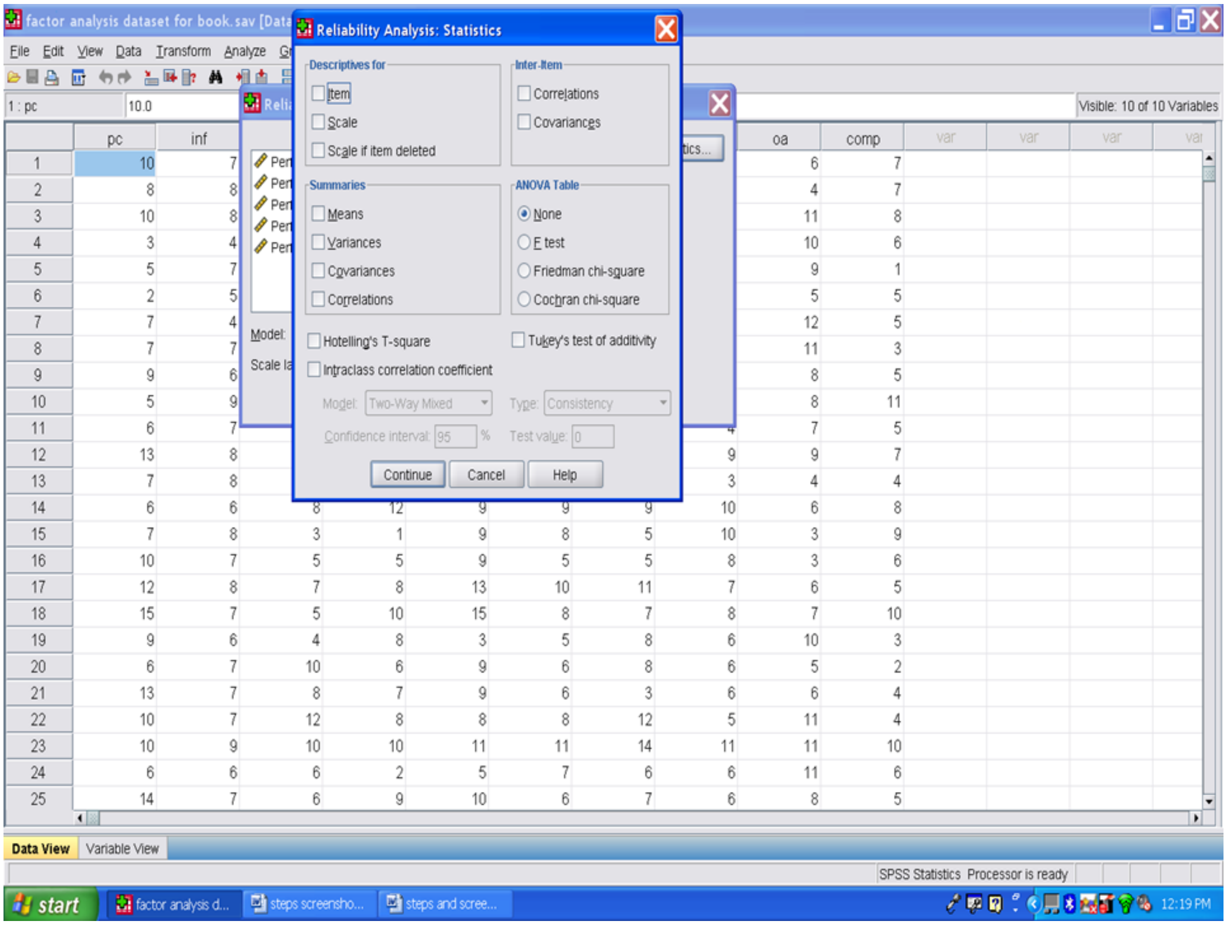
Items:
Verbal 1 (Information) [inf]
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

Model: Alpha

Scale label:

	pc	inf							oa	comp
1	10	7							6	7
2	8	8							4	7
3	10	8							11	8
4	3	4							10	6
5	5	7							9	1
6	2	5							5	5
7	7	4							12	5
8	7	7							11	3
9	9	6							8	5
10	5	9							8	11
11	6	7							7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

After clicking on Statistics, the following screen should appear.

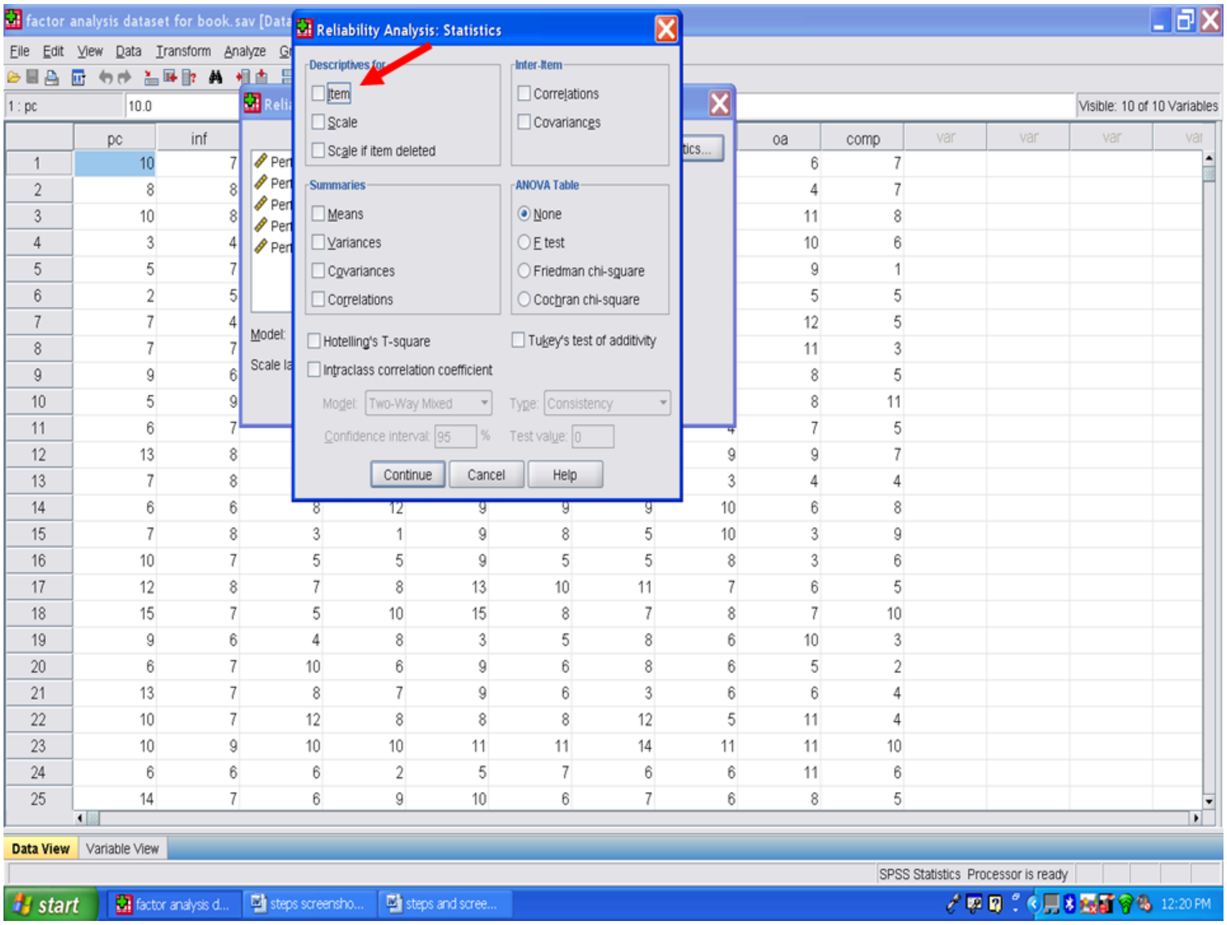


Click under Descriptives on

Item

Scale

Scale if item deleted

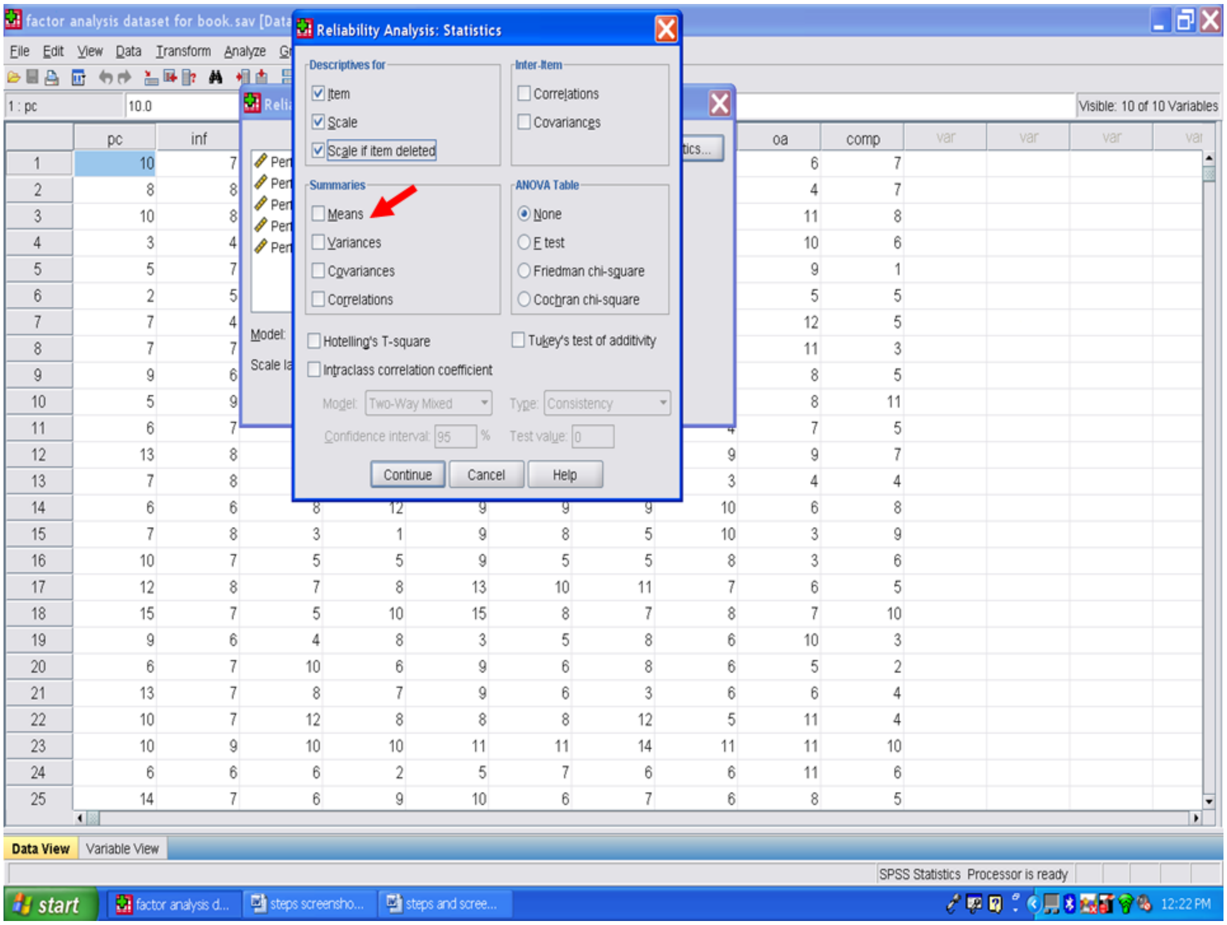


	pc	inf							oa	comp	var	var	var	var
1	10	7							6	7				
2	8	8							4	7				
3	10	8							11	8				
4	3	4							10	6				
5	5	7							9	1				
6	2	5							5	5				
7	7	4							12	5				
8	7	7							11	3				
9	9	6							8	5				
10	5	9							8	11				
11	6	7						4	7	5				
12	13	8						9	9	7				
13	7	8						3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

After you have clicked on the three items under Descriptives, next click under Summaries on

Means

Variances


factor analysis dataset for book.sav [Data
File Edit View Data Transform Analyze Gr
1 : pc
10.0
Visible: 10 of 10 Variables
Reli
Model:
Scale la
tics...
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
steps screensho...
steps and scree...
12:22 PM

Reliability Analysis: Statistics

Descriptives for
☑ Item
☑ Scale
☑ Scale if item deleted

Inter-Item
☐ Correlations
☐ Covariances

Summaries
☐ Means
☐ Variances
☐ Covariances
☐ Correlations

ANOVA Table
● None
○ F test
○ Friedman chi-square
○ Cochran chi-square

☐ Hotelling's T-square
☐ Tukey's test of additivity
☐ Intraclass correlation coefficient

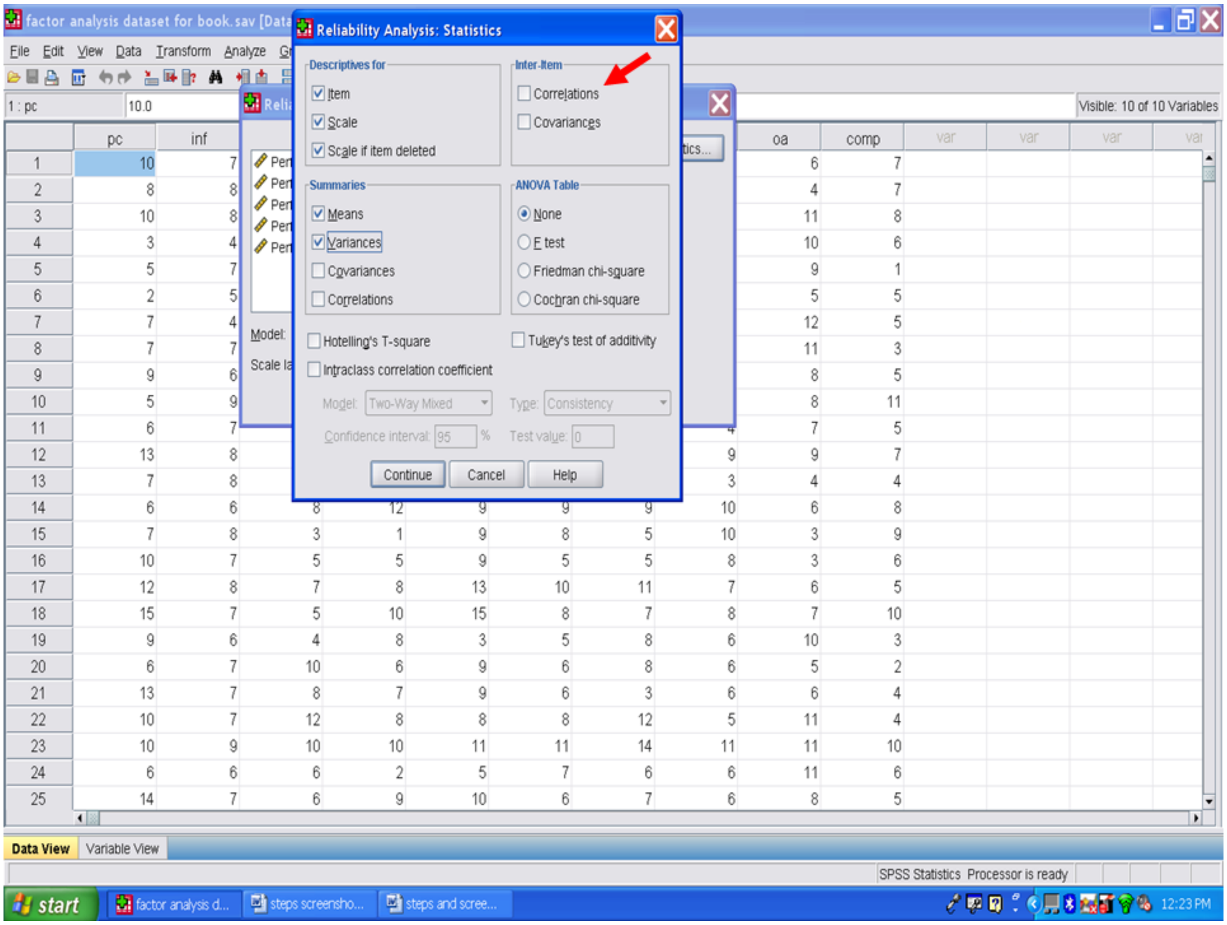
Model: Two-Way Mixed
Type: Consistency
Confidence interval: 95 %
Test value: 0

Continue Cancel Help

	pc	inf							oa	comp	var	var	var	var
1	10	7							6	7				
2	8	8							4	7				
3	10	8							11	8				
4	3	4							10	6				
5	5	7							9	1				
6	2	5							5	5				
7	7	4							12	5				
8	7	7							11	3				
9	9	6							8	5				
10	5	9							8	11				
11	6	7						4	7	5				
12	13	8						9	9	7				
13	7	8						3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

Now that you have clicked on Means and Variances under Summaries, your screen should now look like the screen below. Next, under Inter-Item, click on

Correlations



Reliability Analysis: Statistics

Descriptives for
- ☑ Item
- ☑ Scale
- ☑ Scale if item deleted

Inter-Item
- ☐ Correlations
- ☐ Covariances

Summaries
- ☑ Means
- ☑ Variances
- ☐ Covariances
- ☐ Correlations

ANOVA Table
- ● None
- ○ F test
- ○ Friedman chi-square
- ○ Cochran chi-square

☐ Hotelling's T-square

☐ Tukey's test of additivity

☐ Intraclass correlation coefficient

Model: Two-Way Mixed

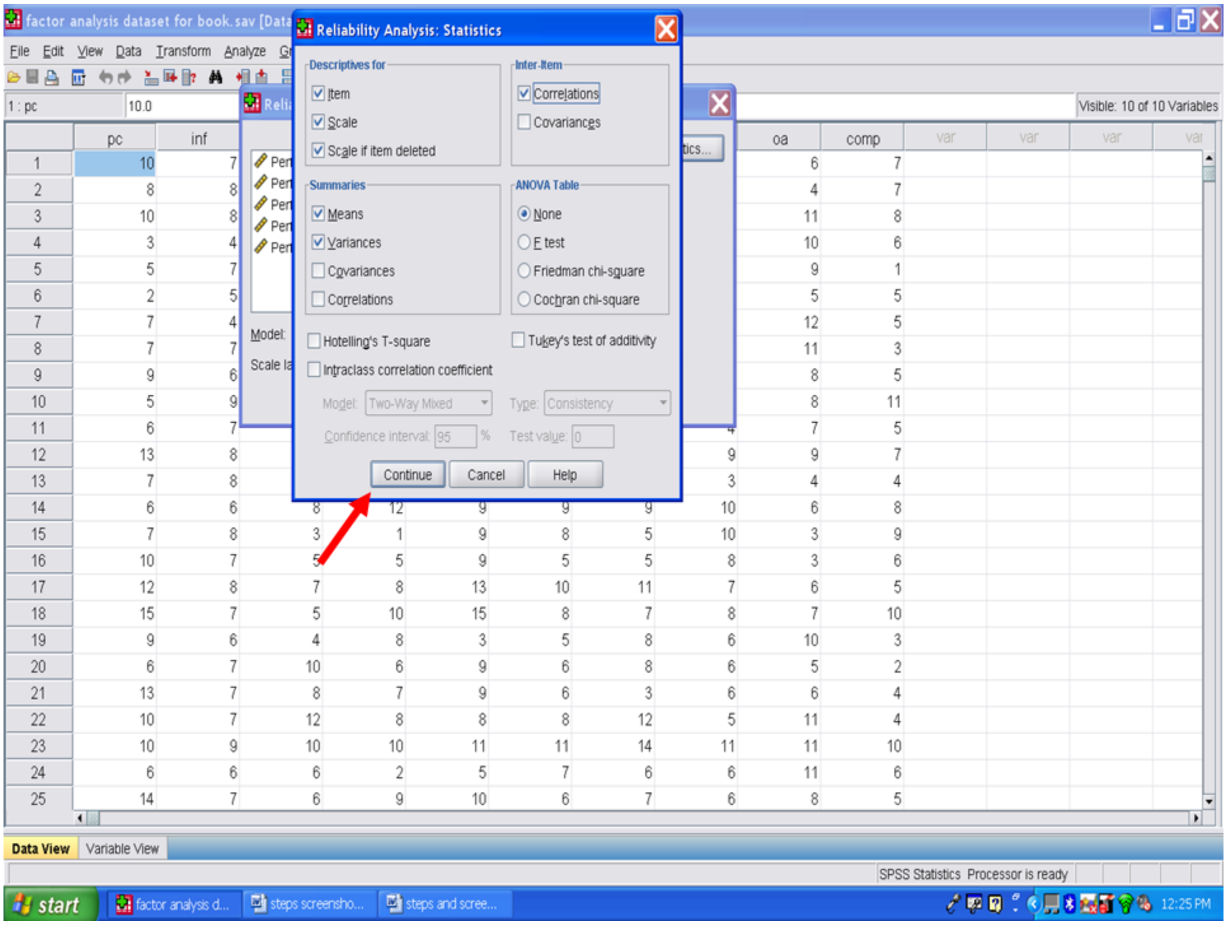
Type: Consistency

Confidence interval: 95 %

Test value: 0

factor analysis dataset for book.sav [Data
File Edit View Data Transform Analyze
Continue
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
Visible: 10 of 10 Variables
start
12:23 PM

After you check to verify that your screen looks the one below, then you may click on Continue.



Reliability Analysis: Statistics

Descriptives for
- ☑ Item
- ☑ Scale
- ☑ Scale if item deleted

Inter-Item
- ☑ Correlations
- ☐ Covariances

Summaries
- ☑ Means
- ☑ Variances
- ☐ Covariances
- ☐ Correlations

ANOVA Table
- ● None
- ○ F test
- ○ Friedman chi-square
- ○ Cochran chi-square

☐ Hotelling's T-square

☐ Tukey's test of additivity

☐ Intraclass correlation coefficient

Model: Two-Way Mixed

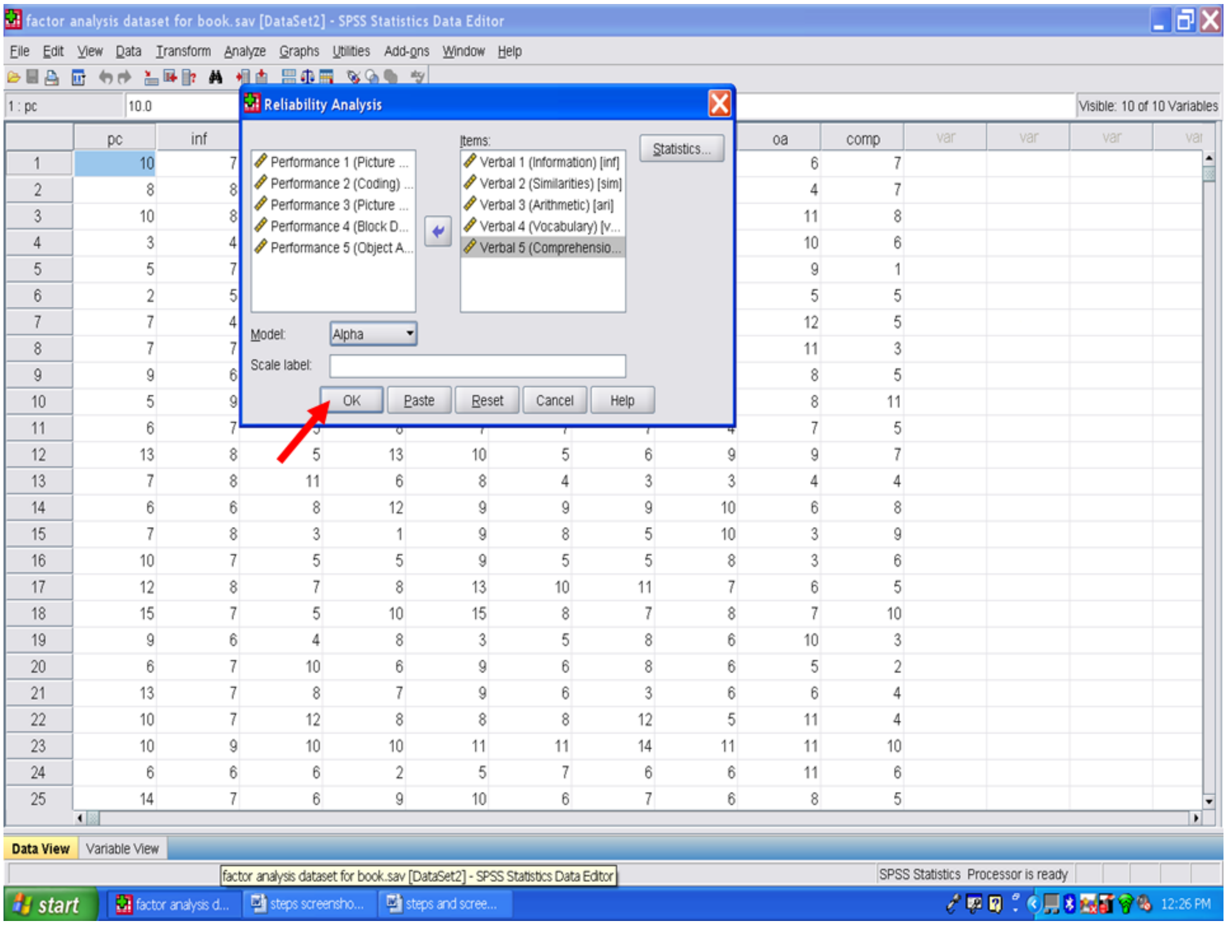
Type: Consistency

Confidence interval: 95 %

Test value: 0

factor analysis dataset for book.sav [Data
File Edit View Data Transform Analyze
Continue
Cancel
Help
Visible: 10 of 10 Variables
Data View
Variable View
SPSS Statistics Processor is ready
start
12:25 PM

Next click on OK.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc 10.0
Visible: 10 of 10 Variables
Reliability Analysis
Statistics...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
12:26 PM

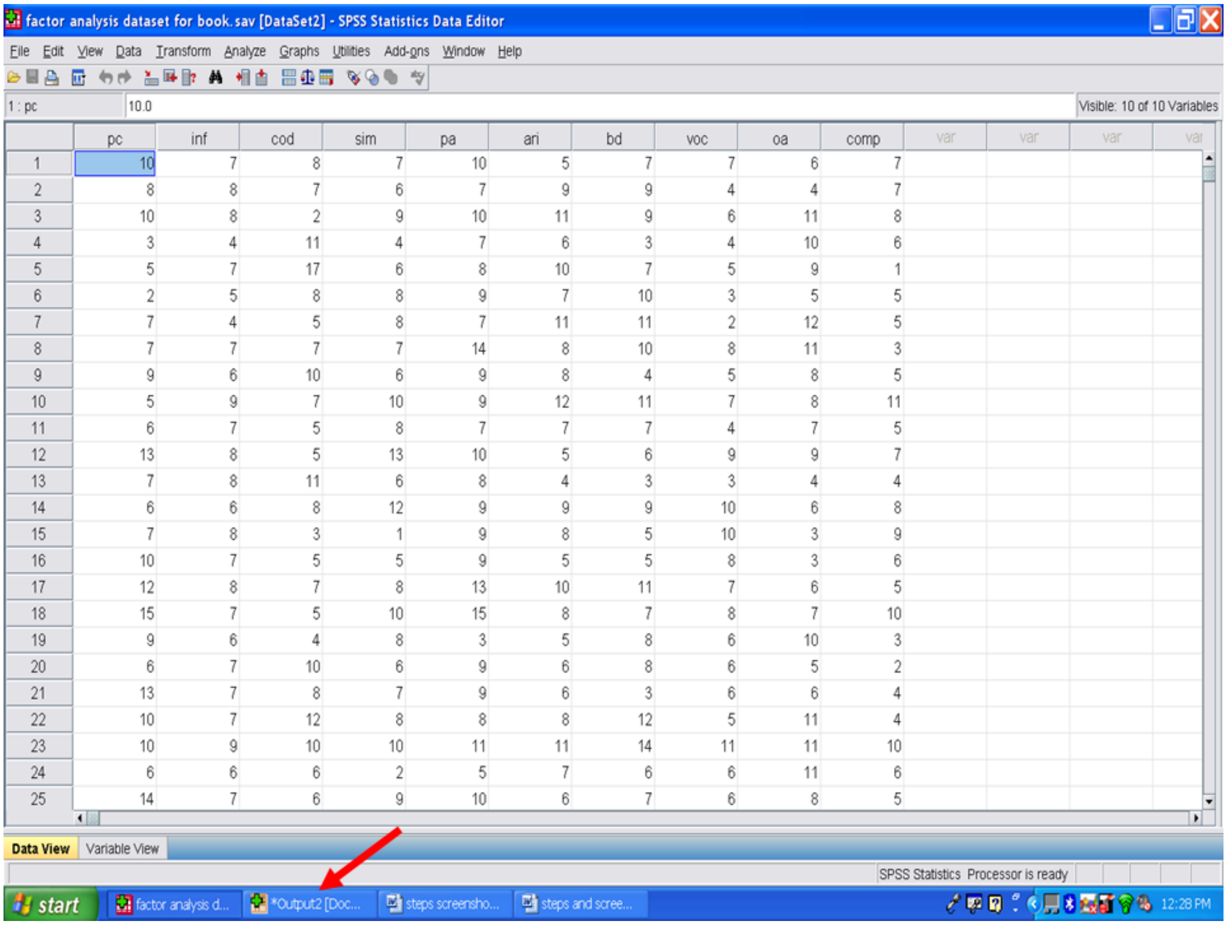
Performance 1 (Picture ...
Performance 2 (Coding) ...
Performance 3 (Picture ...
Performance 4 (Block D...
Performance 5 (Object A...

Items:
Verbal 1 (Information) [inf]
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

Model: Alpha

Scale label:

SPSS should send you to the Output screen. If not, click on the Output icon at the bottom of your screen.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
Visible: 10 of 10 Variables
var
var
var
var
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
*Output2 [Doc...
steps screensho...
steps and scree...
12:28 PM

	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp
1	10	7	8	7	10	5	7	7	6	7
2	8	8	7	6	7	9	9	4	4	7
3	10	8	2	9	10	11	9	6	11	8
4	3	4	11	4	7	6	3	4	10	6
5	5	7	17	6	8	10	7	5	9	1
6	2	5	8	8	9	7	10	3	5	5
7	7	4	5	8	7	11	11	2	12	5
8	7	7	7	7	14	8	10	8	11	3
9	9	6	10	6	9	8	4	5	8	5
10	5	9	7	10	9	12	11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

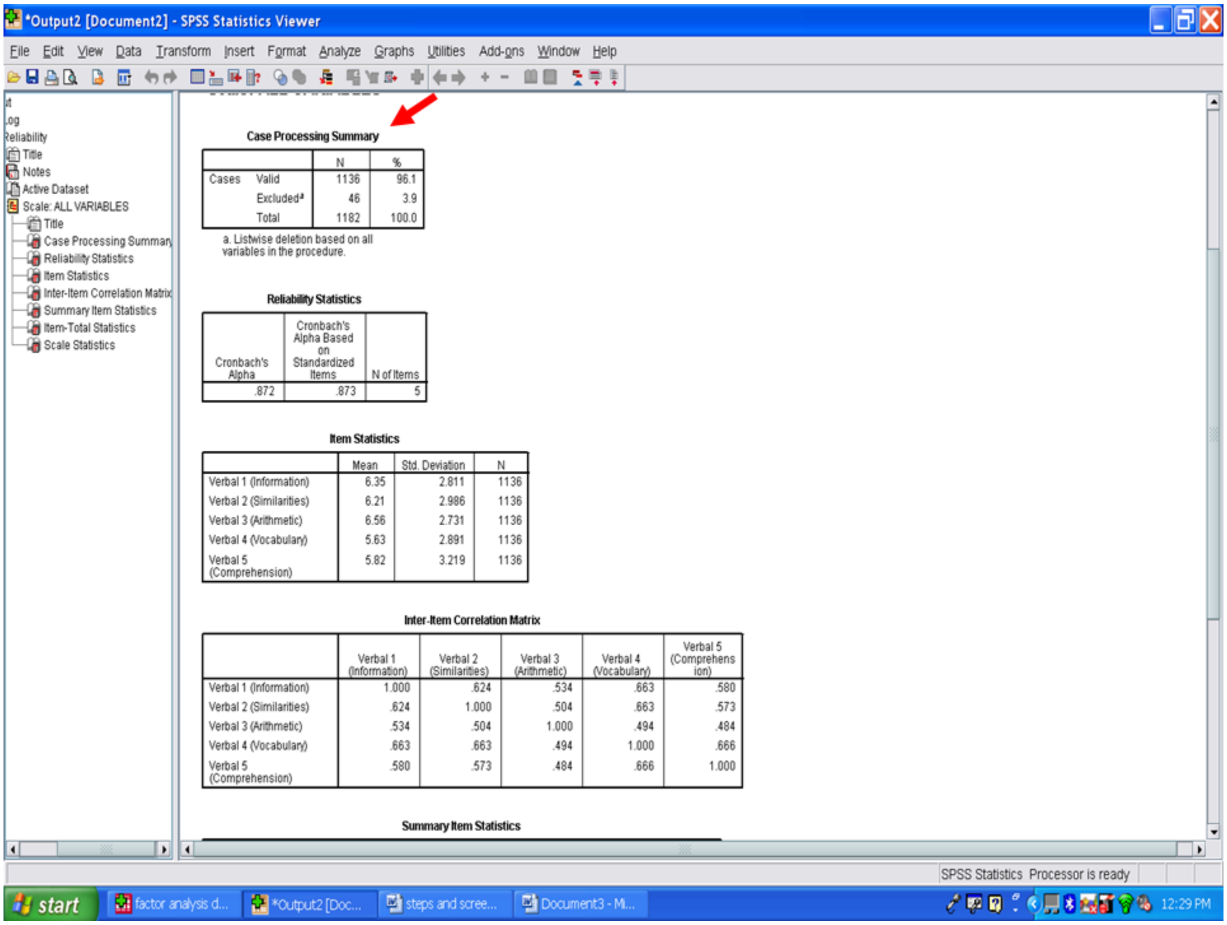
Internal Consistency Analysis: Part II

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

Now that you are in the SPSS output screen, your screen should resemble the following one.

The first table, labeled Case Processing Summary, indicates how many cases were in the analysis. In this example, 1,136 cases out of the total sample of 1,182 were used in the analysis.



Case Processing Summary

		N	%
Cases	Valid	1136	96.1
	Excluded[a]	46	3.9
	Total	1182	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.872	.873	5

Item Statistics

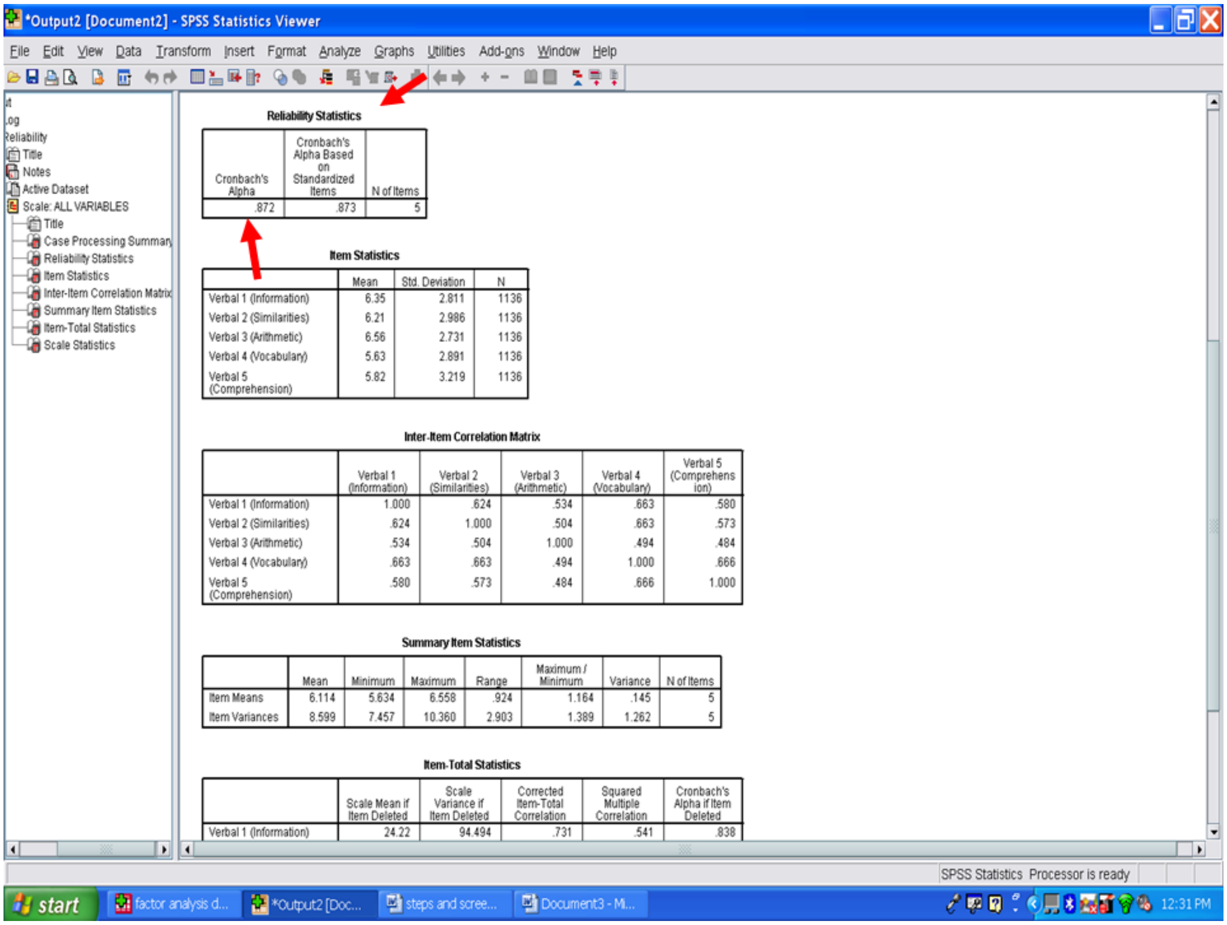
	Mean	Std. Deviation	N
Verbal 1 (Information)	6.35	2.811	1136
Verbal 2 (Similarities)	6.21	2.986	1136
Verbal 3 (Arithmetic)	6.56	2.731	1136
Verbal 4 (Vocabulary)	5.63	2.891	1136
Verbal 5 (Comprehension)	5.82	3.219	1136

Inter-Item Correlation Matrix

	Verbal 1 (Information)	Verbal 2 (Similarities)	Verbal 3 (Arithmetic)	Verbal 4 (Vocabulary)	Verbal 5 (Comprehension)
Verbal 1 (Information)	1.000	.624	.534	.663	.580
Verbal 2 (Similarities)	.624	1.000	.504	.663	.573
Verbal 3 (Arithmetic)	.534	.504	1.000	.494	.484
Verbal 4 (Vocabulary)	.663	.663	.494	1.000	.666
Verbal 5 (Comprehension)	.580	.573	.484	.666	1.000

Summary Item Statistics

The next table titled Reliability Statistics indicates the score reliability for these five Verbal subscales. The Cronbach’s Coefficient Alpa is .872 for these five Verbal subscales.



Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.872	.873	5

Item Statistics

	Mean	Std. Deviation	N
Verbal 1 (Information)	6.35	2.811	1136
Verbal 2 (Similarities)	6.21	2.986	1136
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Verbal 4 (Vocabulary)	5.63	2.891	1136
Verbal 5 (Comprehension)	5.82	3.219	1136

Inter-Item Correlation Matrix

	Verbal 1 (Information)	Verbal 2 (Similarities)	Verbal 3 (Arithmetic)	Verbal 4 (Vocabulary)	Verbal 5 (Comprehension)
Verbal 1 (Information)	1.000	.624	.534	.663	.580
Verbal 2 (Similarities)	.624	1.000	.504	.663	.573
Verbal 3 (Arithmetic)	.534	.504	1.000	.494	.484
Verbal 4 (Vocabulary)	.663	.663	.494	1.000	.666
Verbal 5 (Comprehension)	.580	.573	.484	.666	1.000

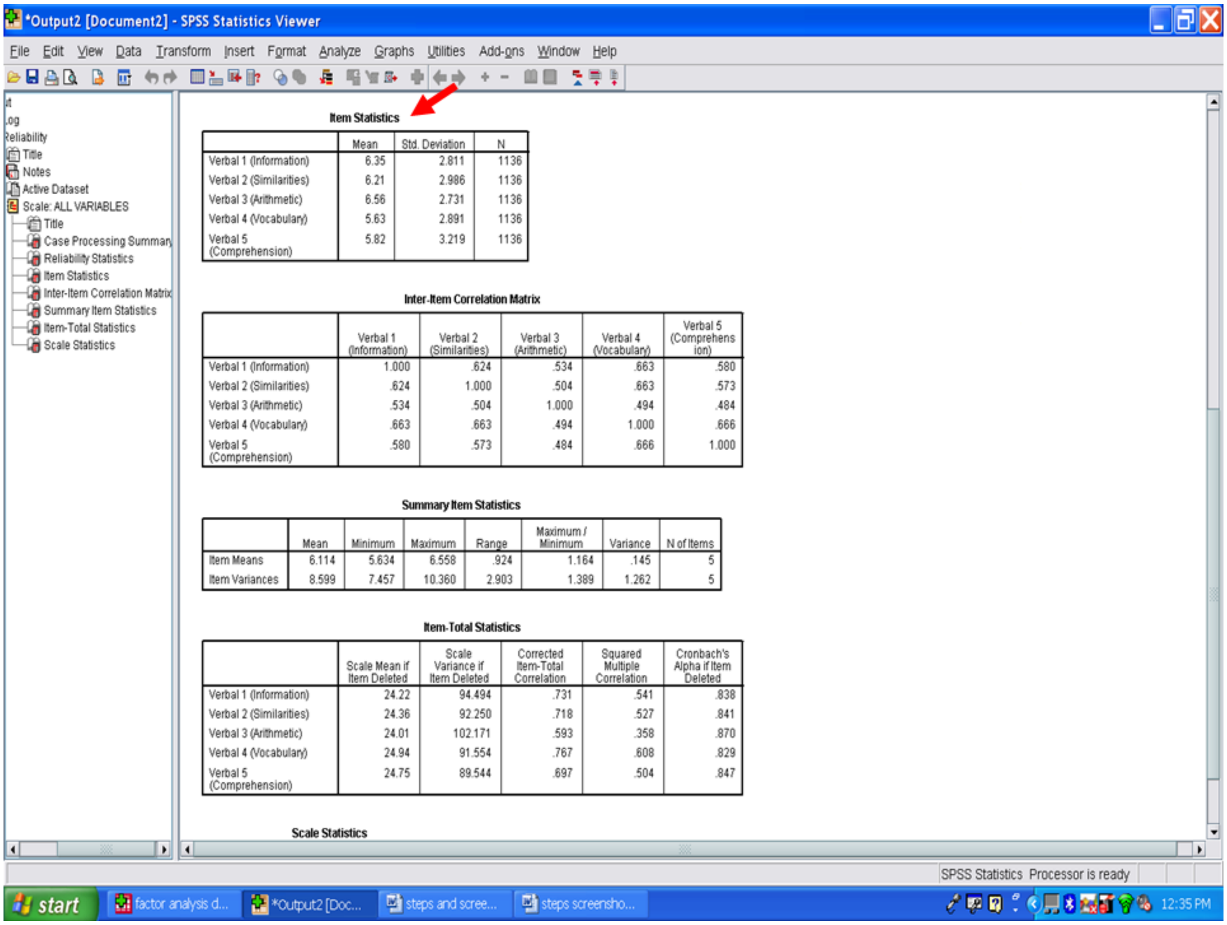
Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	6.114	5.634	6.558	.924	1.164	.145	5
Item Variances	8.599	7.457	10.360	2.903	1.389	1.262	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Verbal 1 (Information)	24.22	94.494	.731	.541	.838

The table, labeled as Item Statistics, below the Reliability Statistics table contains the descriptive statistics for these five Verbal subscales for all participants in the sample. This information may be helpful in your Results section.



Item Statistics

	Mean	Std. Deviation	N
Verbal 1 (Information)	6.35	2.811	1136
Verbal 2 (Similarities)	6.21	2.986	1136
Verbal 3 (Arithmetic)	6.56	2.731	1136
Verbal 4 (Vocabulary)	5.63	2.891	1136
Verbal 5 (Comprehension)	5.82	3.219	1136

Inter-Item Correlation Matrix

	Verbal 1 (Information)	Verbal 2 (Similarities)	Verbal 3 (Arithmetic)	Verbal 4 (Vocabulary)	Verbal 5 (Comprehension)
Verbal 1 (Information)	1.000	.624	.534	.663	.580
Verbal 2 (Similarities)	.624	1.000	.504	.663	.573
Verbal 3 (Arithmetic)	.534	.504	1.000	.494	.484
Verbal 4 (Vocabulary)	.663	.663	.494	1.000	.666
Verbal 5 (Comprehension)	.580	.573	.484	.666	1.000

Summary Item Statistics

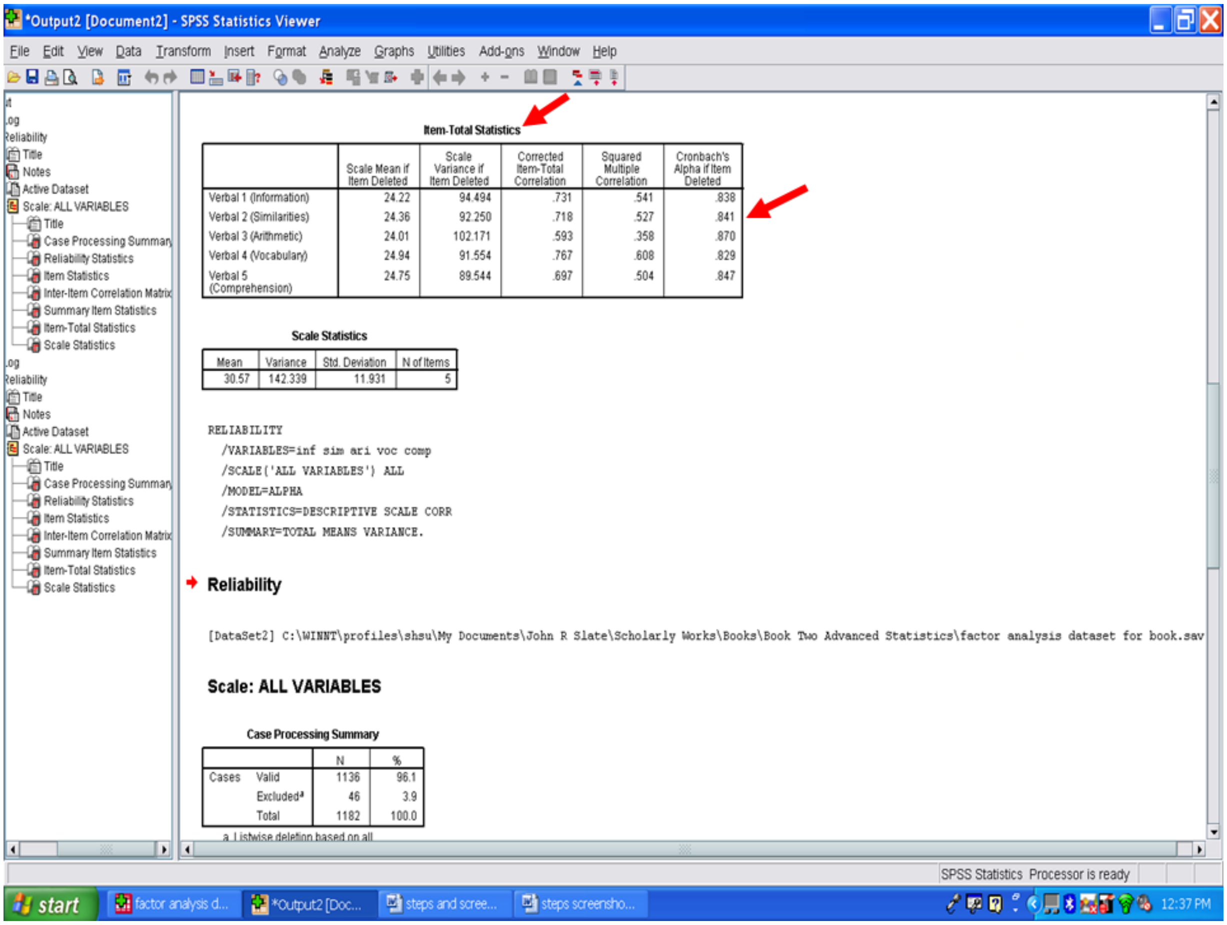
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	6.114	5.634	6.558	.924	1.164	.145	5
Item Variances	8.599	7.457	10.360	2.903	1.389	1.262	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Verbal 1 (Information)	24.22	94.494	.731	.541	.838
Verbal 2 (Similarities)	24.36	92.250	.718	.527	.841
Verbal 3 (Arithmetic)	24.01	102.171	.593	.358	.870
Verbal 4 (Vocabulary)	24.94	91.554	.767	.608	.829
Verbal 5 (Comprehension)	24.75	89.544	.697	.504	.847

Scale Statistics

The next table of importance is the one labeled Item-Total Statistics. The far right column of this table, Cronbach's Alpha if Item Deleted, indicates how much of a change in internal consistency will occur if you delete that variable from the group. As our Cronbach's Coefficient Alpha for all 5 Verbal subscales was .872, as previously noted, no increase occurs in the internal consistency if any of the 5 Verbal subscales are deleted.



Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Verbal 1 (Information)	24.22	94.494	.731	.541	.838
Verbal 2 (Similarities)	24.36	92.250	.718	.527	.841
Verbal 3 (Arithmetic)	24.01	102.171	.593	.358	.870
Verbal 4 (Vocabulary)	24.94	91.554	.767	.608	.829
Verbal 5 (Comprehension)	24.75	89.544	.697	.504	.847

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
30.57	142.339	11.931	5

```
RELIABILITY
  /VARIABLES=inf sim ari voc comp
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

```
[DataSet2] C:\WINNT\profiles\shsu\My Documents\John R Slate\Scholarly Works\Books\Book Two Advanced Statistics\factor analysis dataset for book.sav
```

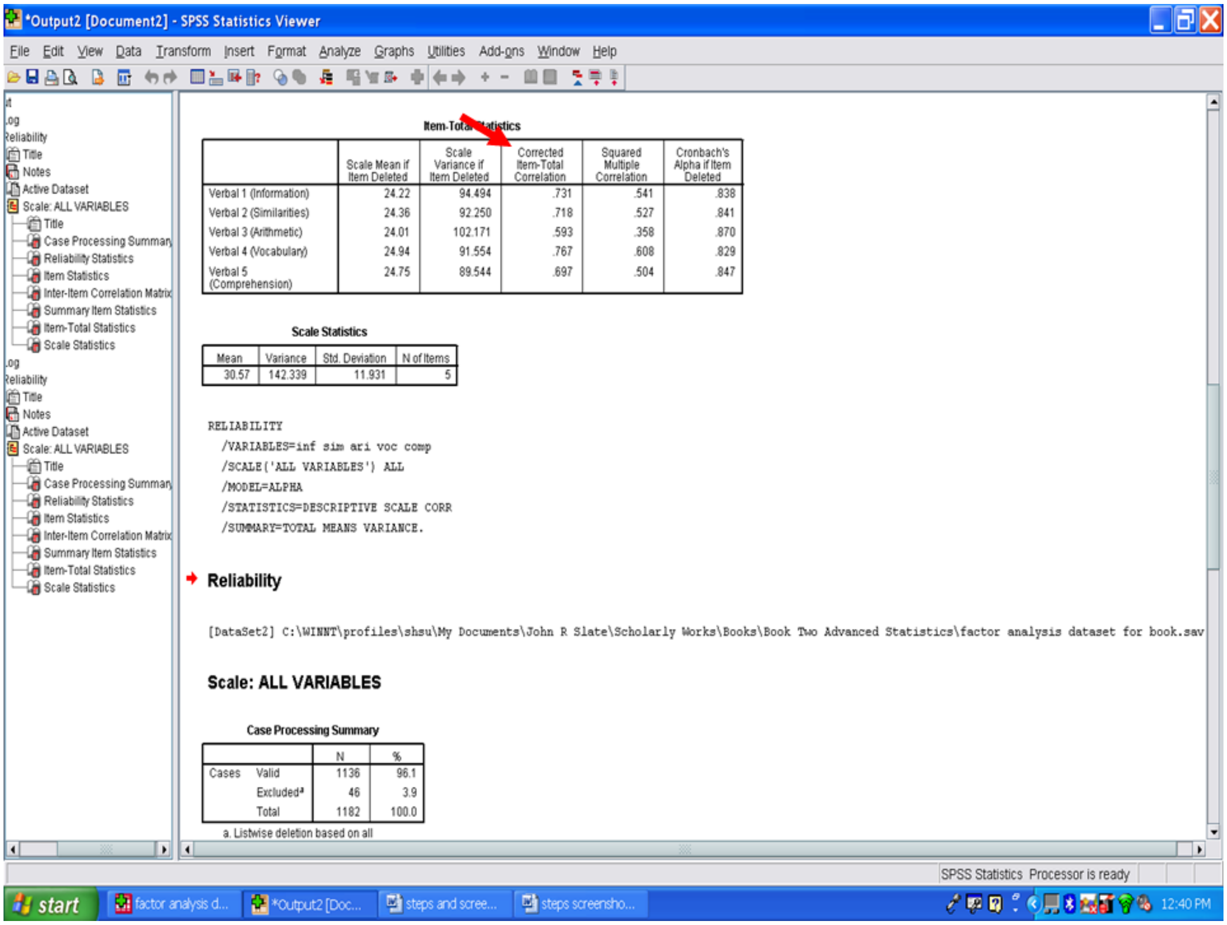
Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	1136	96.1
	Excluded^a	46	3.9
	Total	1182	100.0

a. Listwise deletion based on all

The next column in this table that we examine is the one labeled Corrected Item-Total Correlation. These values indicate the extent to which each variable is related with the group of variables, in this case with the total of the Verbal subscales. The higher the correlation, the more that item/variable is associated with the total of the group. The values in this column reflect that these five Verbal subscales are consistently contributing to the measurement of the same/similar construct.



Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Verbal 1 (Information)	24.22	94.494	.731	.541	.838
Verbal 2 (Similarities)	24.36	92.250	.718	.527	.841
Verbal 3 (Arithmetic)	24.01	102.171	.593	.358	.870
Verbal 4 (Vocabulary)	24.94	91.554	.767	.608	.829
Verbal 5 (Comprehension)	24.75	89.544	.697	.504	.847

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
30.57	142.339	11.931	5

```
RELIABILITY
  /VARIABLES=inf sim ari voc comp
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

```
[DataSet2] C:\WINNT\profiles\shsu\My Documents\John R Slate\Scholarly Works\Books\Book Two Advanced Statistics\factor analysis dataset for book.sav
```

Scale: ALL VARIABLES

Case Processing Summary

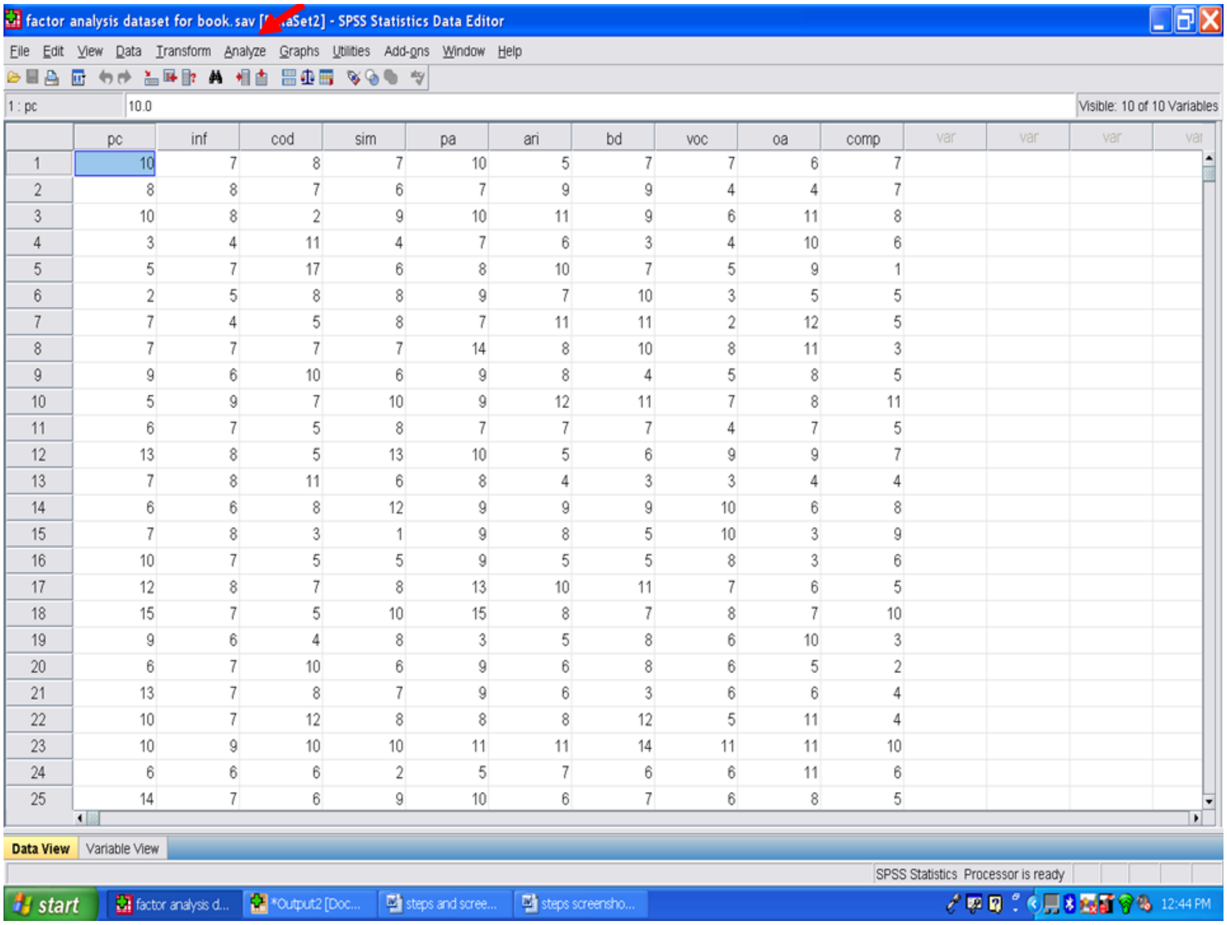
		N	%
Cases	Valid	1136	96.1
	Excluded[a]	46	3.9
	Total	1182	100.0

a. Listwise deletion based on all

In the case of the five Verbal subscales, all five subscales may be regarded as providing internally consistent scores. Moreover, their scores can be aggregated or added together to create a composite score. See our chapter on data transformation – creating a new variable.

Now that we have determined the internal consistency of the Verbal subscales, we will ascertain the extent to which the Performance subscales are internally consistent.

From the data window, click on Analyze


factor analysis dataset for book.sav [[illegible]aSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Data View
Variable View
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
12:44 PM

1 : pc 10.0

Visible: 10 of 10 Variables

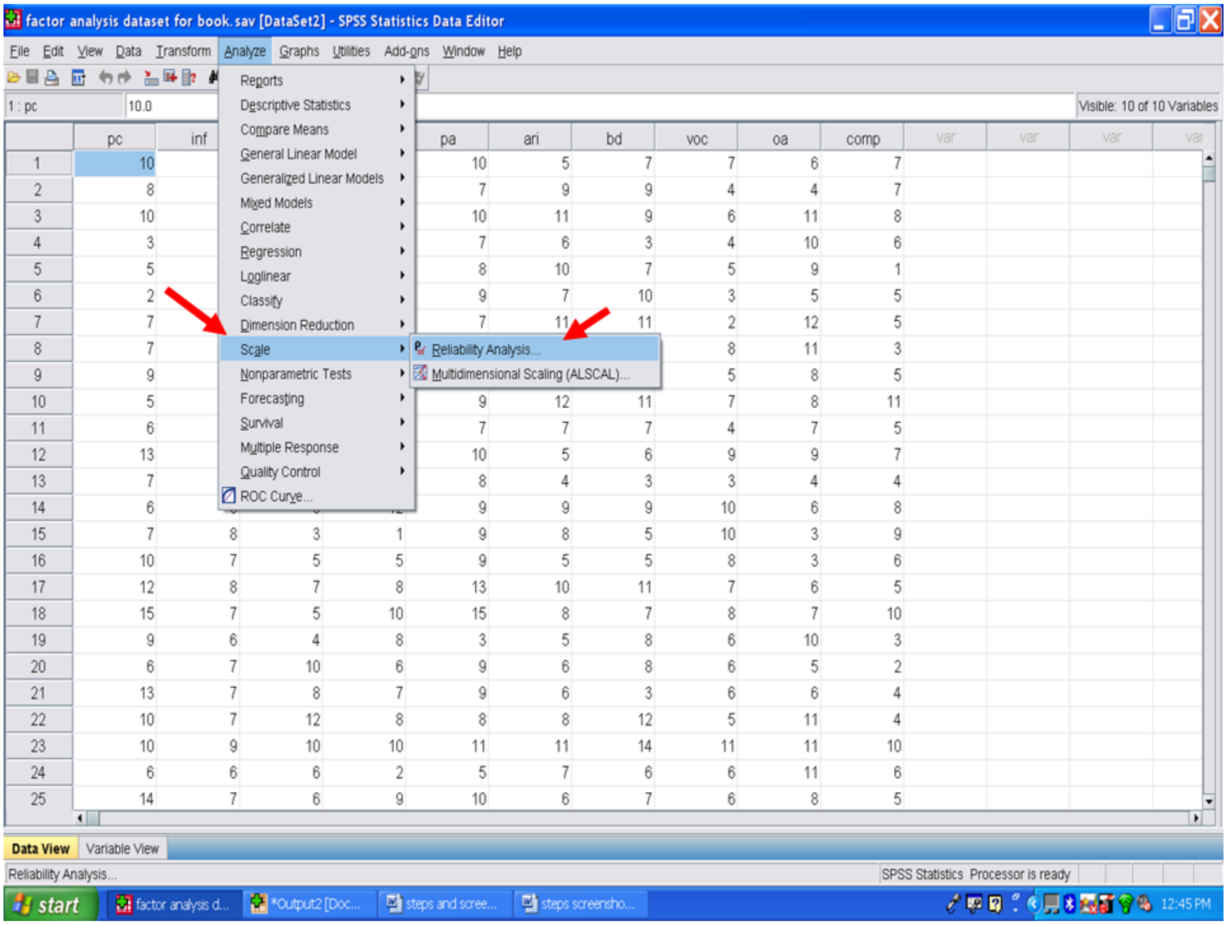
	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp
1	10	7	8	7	10	5	7	7	6	7
2	8	8	7	6	7	9	9	4	4	7
3	10	8	2	9	10	11	9	6	11	8
4	3	4	11	4	7	6	3	4	10	6
5	5	7	17	6	8	10	7	5	9	1
6	2	5	8	8	9	7	10	3	5	5
7	7	4	5	8	7	11	11	2	12	5
8	7	7	7	7	14	8	10	8	11	3
9	9	6	10	6	9	8	4	5	8	5
10	5	9	7	10	9	12	11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

SPSS Statistics Processor is ready

After clicking on Analyze,

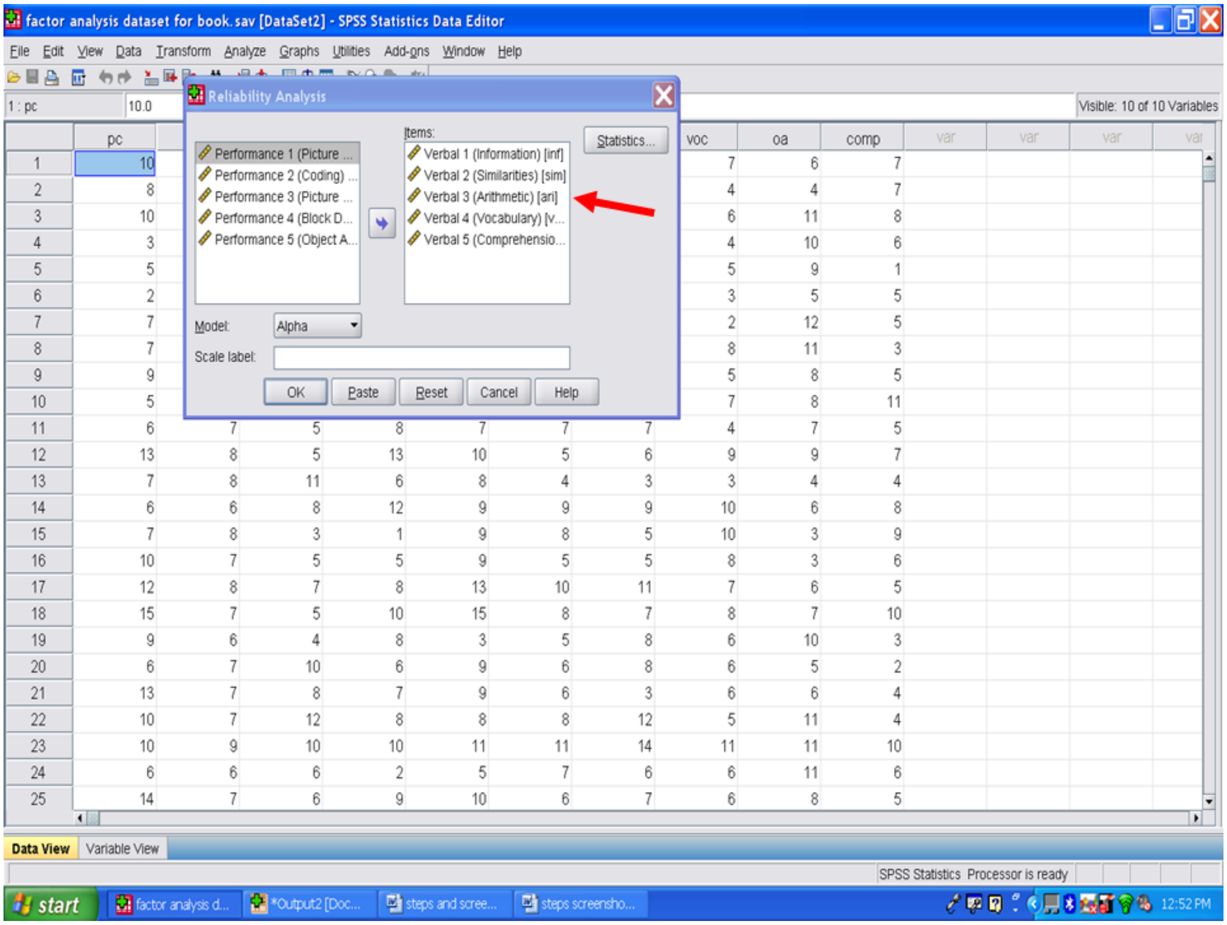
Click on Scale.

Click on Reliability Analysis.



	pc	inf			pa	ari	bd	voc	oa	comp
1	10				10	5	7	7	6	7
2	8				7	9	9	4	4	7
3	10				10	11	9	6	11	8
4	3				7	6	3	4	10	6
5	5				8	10	7	5	9	1
6	2				9	7	10	3	5	5
7	7				7	11	11	2	12	5
8	7							8	11	3
9	9							5	8	5
10	5				9	12	11	7	8	11
11	6				7	7	7	4	7	5
12	13				10	5	6	9	9	7
13	7				8	4	3	3	4	4
14	6				9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

Because this reliability analysis is the second one you are conducting, the screen shows the five Verbal subtests included in the first analysis. Remove these from the Items box.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 10 of 10 Variables
Reliability Analysis
Statistics...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
12:52 PM

1 : pc 10.0

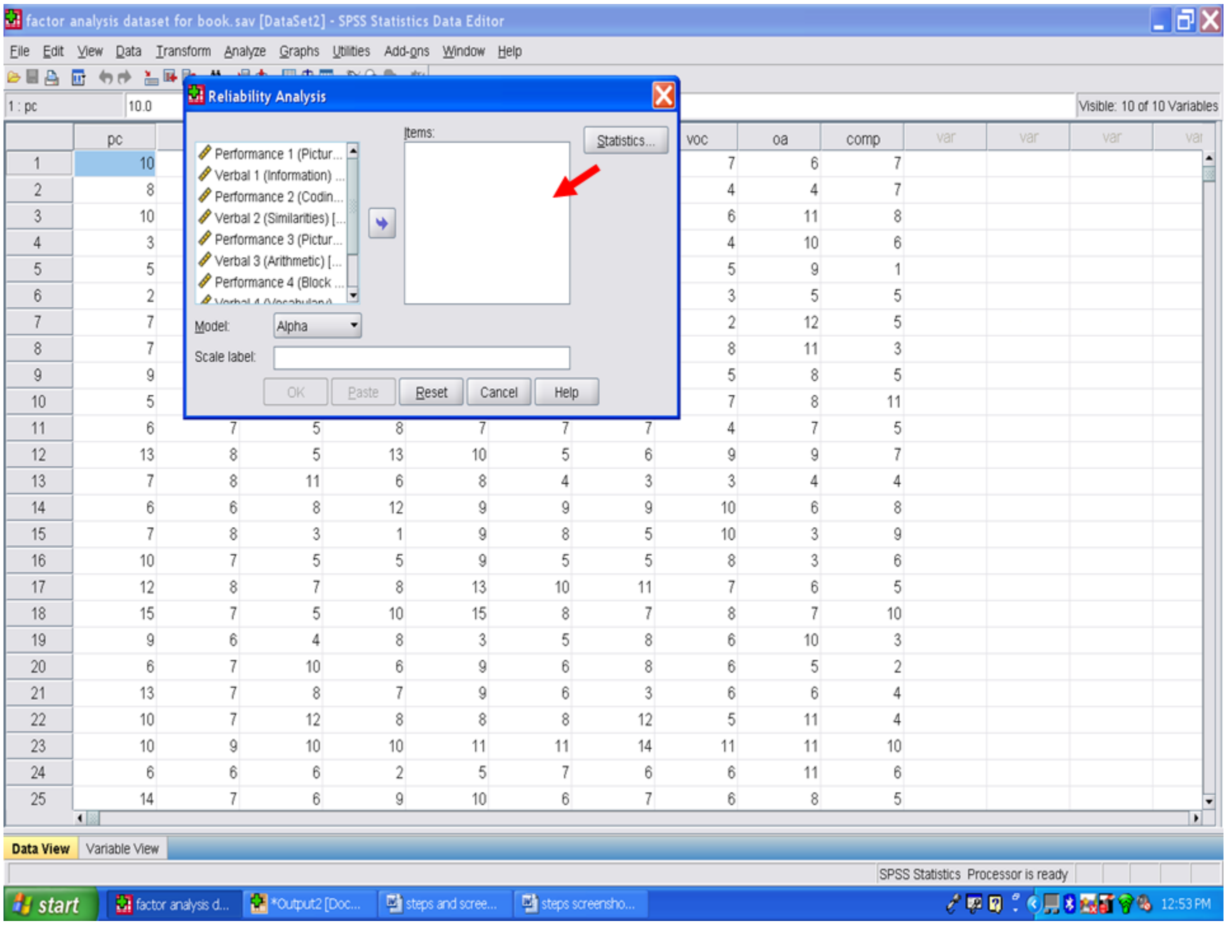
Performance 1 (Picture ...
Performance 2 (Coding) ...
Performance 3 (Picture ...
Performance 4 (Block D...
Performance 5 (Object A...

Items:
Verbal 1 (Information) [inf]
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

Model: Alpha
Scale label:

	pc							voc	oa	comp	var	var	var	var
1	10							7	6	7				
2	8							4	4	7				
3	10							6	11	8				
4	3							4	10	6				
5	5							5	9	1				
6	2							3	5	5				
7	7							2	12	5				
8	7							8	11	3				
9	9							5	8	5				
10	5							7	8	11				
11	6	7	5	8	7	7	7	4	7	5				
12	13	8	5	13	10	5	6	9	9	7				
13	7	8	11	6	8	4	3	3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

Your screen will now look like the following one. Now we will determine the internal consistency of the Performance subscales. From the factor analysis chapter, Performance 2 was determined to not be part of this cluster or group of subscales. Therefore, we will place only Performance 1 (Picture Completion), Performance 3 (Picture Arrangement), Performance 4 (Block Design), and Performance 5 (Object Assembly) in the Items box.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Visible: 10 of 10 Variables
Reliability Analysis
Statistics...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
12:53 PM

1 : pc 10.0

Items:

- Performance 1 (Pictur...
- Verbal 1 (Information) ...
- Performance 2 (Codin...
- Verbal 2 (Similarities) [...
- Performance 3 (Pictur...
- Verbal 3 (Arithmetic) [...
- Performance 4 (Block ...
- Verbal 4 (Vocabulary)

Model: Alpha

Scale label:

	pc							voc	oa	comp
1	10							7	6	7
2	8							4	4	7
3	10							6	11	8
4	3							4	10	6
5	5							5	9	1
6	2							3	5	5
7	7							2	12	5
8	7							8	11	3
9	9							5	8	5
10	5							7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

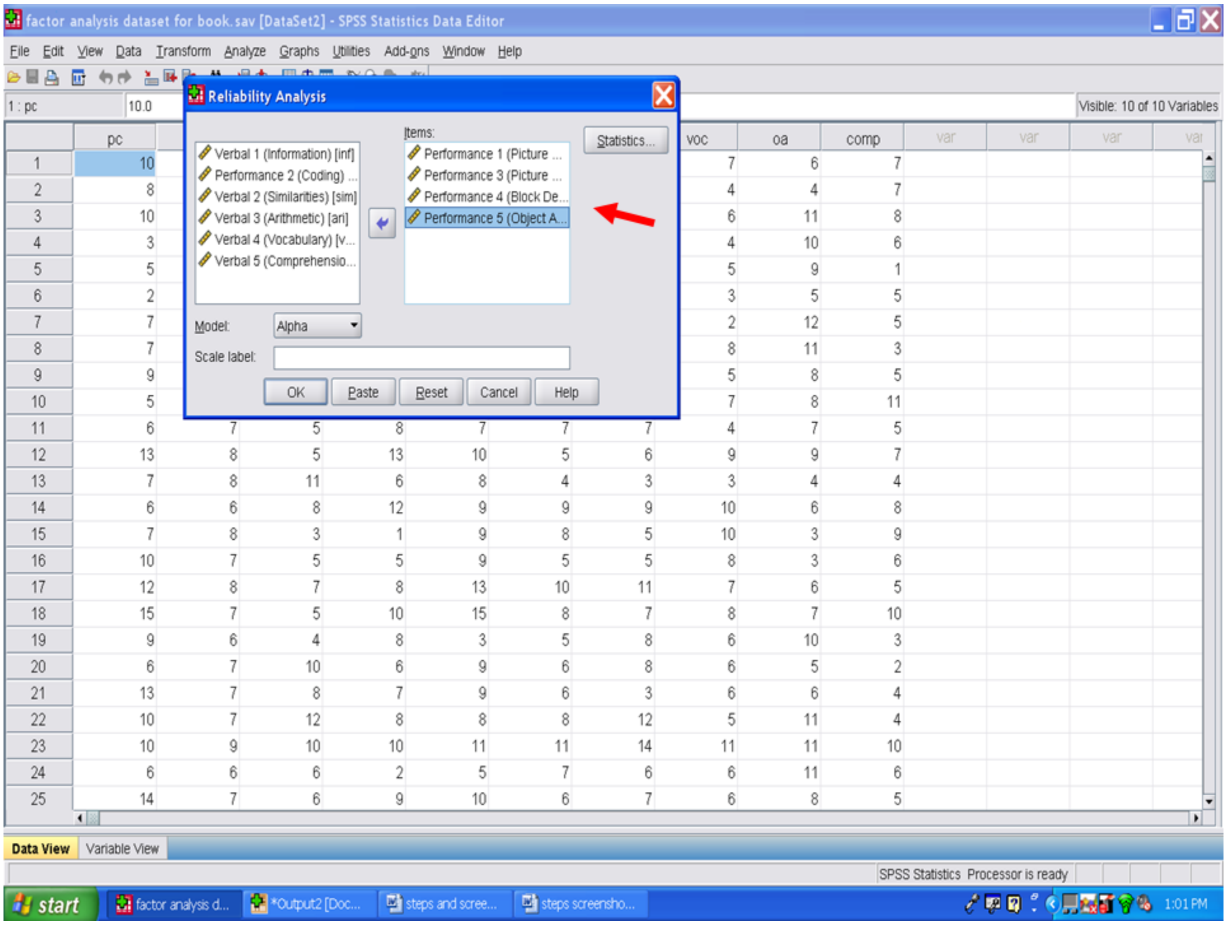
Internal Consistency Analysis: Part III

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

Once the four Performance subscales have been sent to the Items box, your screen would look like the following one:


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Reliability Analysis
Statistics...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
1:01 PM

1 : pc 10.0

Visible: 10 of 10 Variables

Verbal 1 (Information) [inf]
Performance 2 (Coding) ...
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

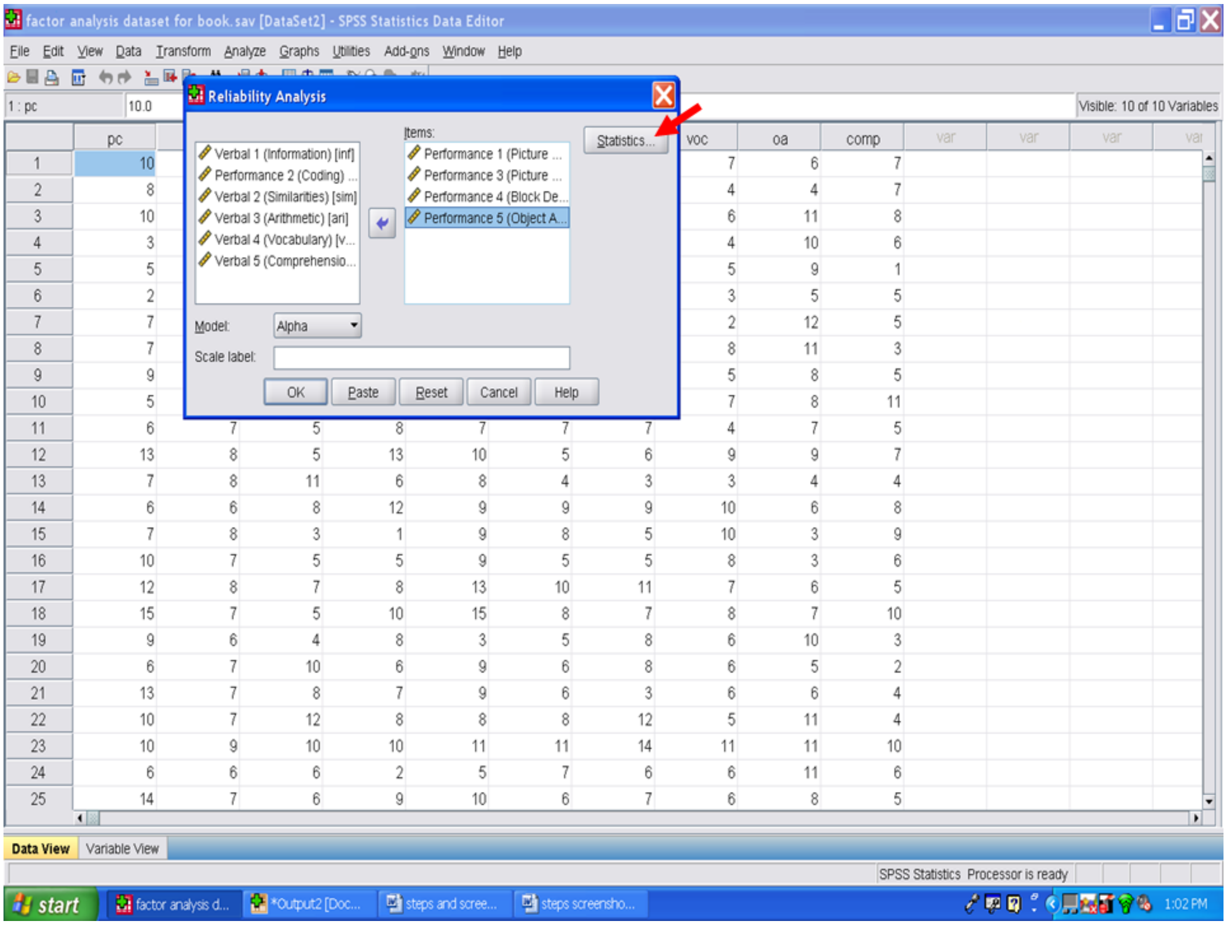
Items:
Performance 1 (Picture ...
Performance 3 (Picture ...
Performance 4 (Block De...
Performance 5 (Object A...

Model: Alpha

Scale label:

	pc							voc	oa	comp	var	var	var	var
1	10							7	6	7				
2	8							4	4	7				
3	10							6	11	8				
4	3							4	10	6				
5	5							5	9	1				
6	2							3	5	5				
7	7							2	12	5				
8	7							8	11	3				
9	9							5	8	5				
10	5							7	8	11				
11	6	7	5	8	7	7	7	4	7	5				
12	13	8	5	13	10	5	6	9	9	7				
13	7	8	11	6	8	4	3	3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

Next, click on Statistics.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Reliability Analysis
Statistics...
OK Paste Reset Cancel Help
Data View Variable View
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
1:02 PM

1 : pc 10.0

Visible: 10 of 10 Variables

Verbal 1 (Information) [inf]
Performance 2 (Coding) ...
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

Items:
Performance 1 (Picture ...
Performance 3 (Picture ...
Performance 4 (Block De...
Performance 5 (Object A...

Model: Alpha

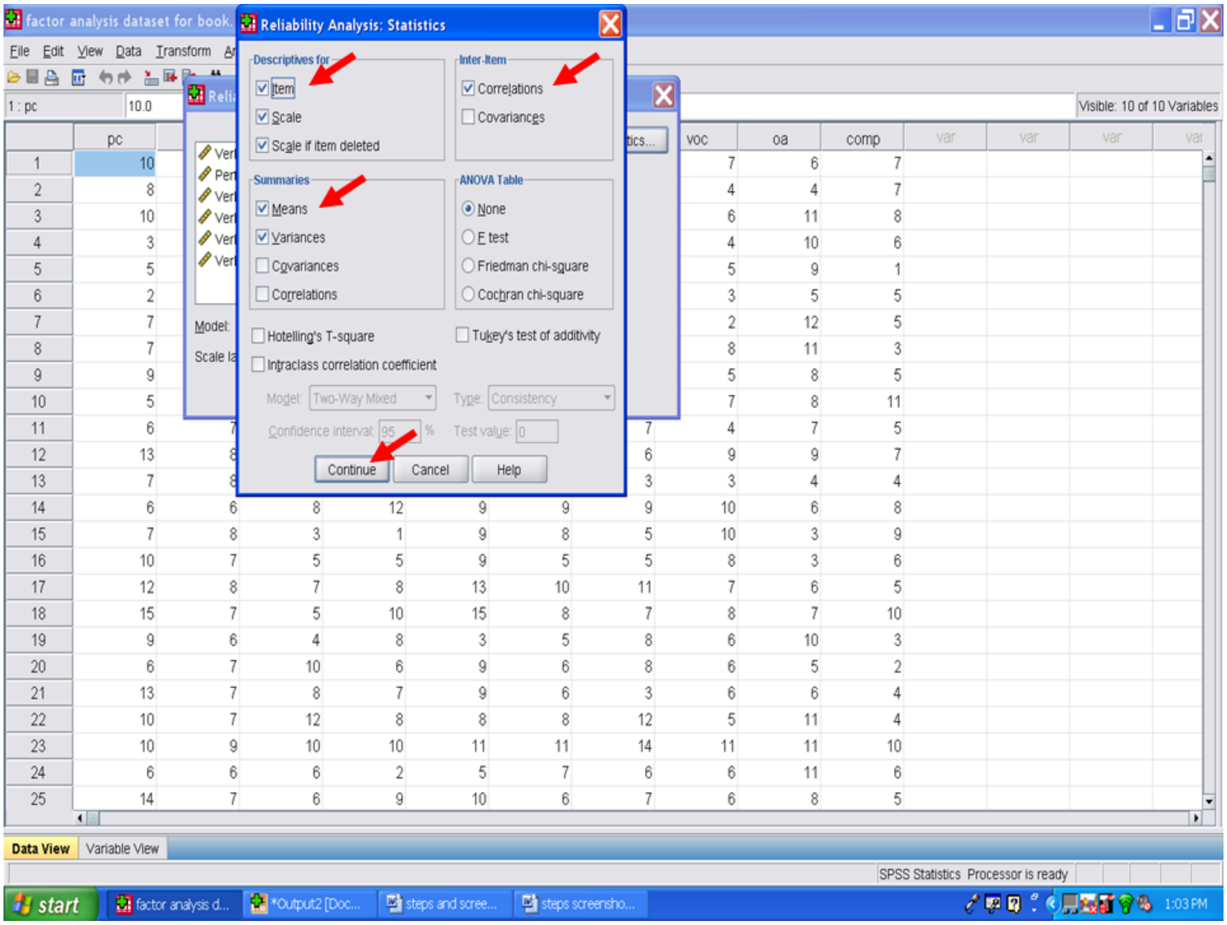
Scale label:

	pc							voc	oa	comp
1	10							7	6	7
2	8							4	4	7
3	10							6	11	8
4	3							4	10	6
5	5							5	9	1
6	2							3	5	5
7	7							2	12	5
8	7							8	11	3
9	9							5	8	5
10	5							7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

SPSS Statistics Processor is ready

You will note that all of the items you had clicked on when conducting the previous internal consistency analysis remain active.

Click on Continue.



1 : pc 10.0

Visible: 10 of 10 Variables

Reliability Analysis: Statistics

Descriptives for
☑ Item
☑ Scale
☑ Scale if item deleted

Inter-Item
☑ Correlations
☐ Covariances

Summaries
☑ Means
☑ Variances
☐ Covariances
☐ Correlations

ANOVA Table
● None
○ F test
○ Friedman chi-square
○ Cochran chi-square

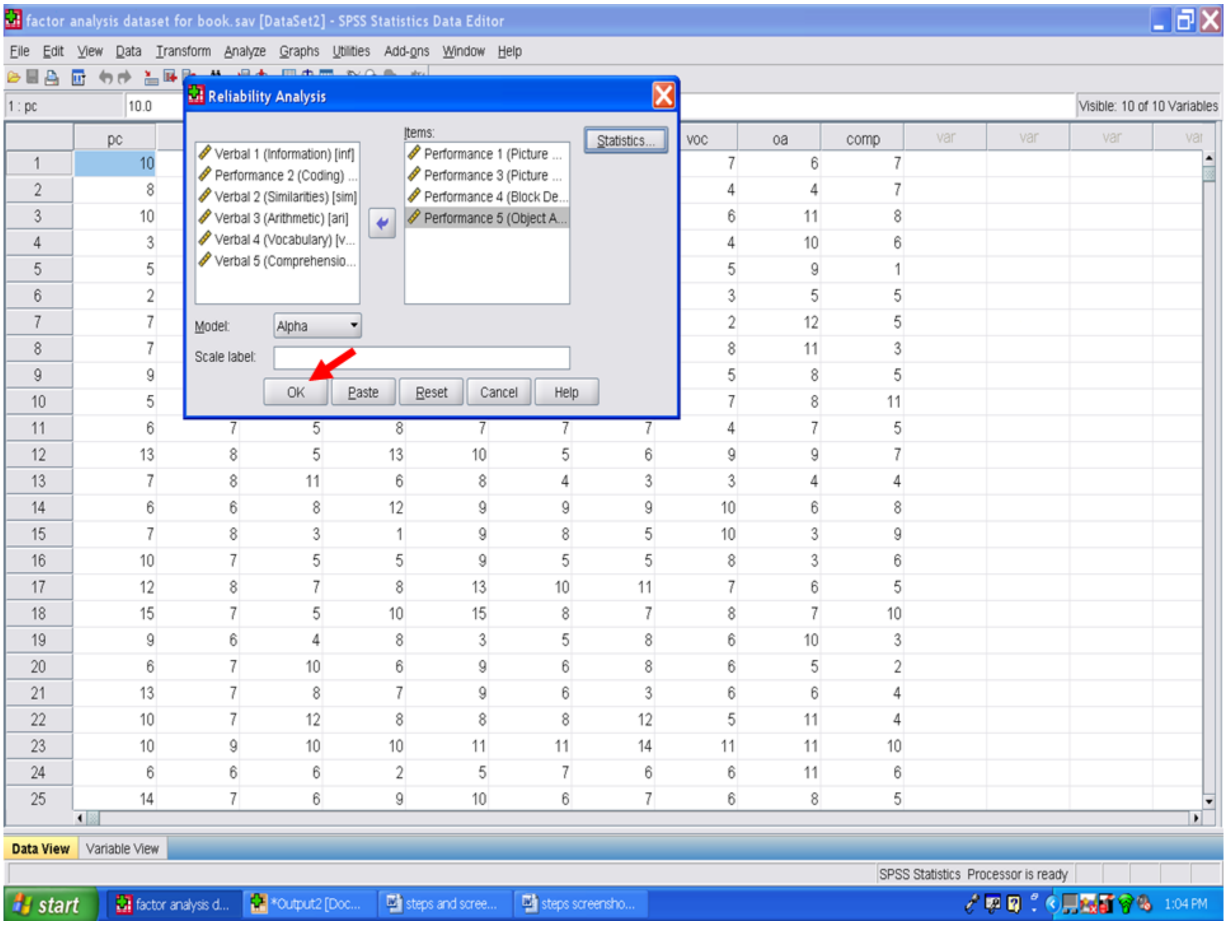
☐ Hotelling's T-square
☐ Tukey's test of additivity
☐ Intraclass correlation coefficient

Model: Two-Way Mixed
Type: Consistency
Confidence interval: 95 %
Test value: 0

	pc							voc	oa	comp
1	10							7	6	7
2	8							4	4	7
3	10							6	11	8
4	3							4	10	6
5	5							5	9	1
6	2							3	5	5
7	7							2	12	5
8	7							8	11	3
9	9							5	8	5
10	5							7	8	11
11	6	7					7	4	7	5
12	13	8					6	9	9	7
13	7	8					3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

SPSS Statistics Processor is ready

Click on OK and this internal consistency analysis will be conducted.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
Visible: 10 of 10 Variables
Reliability Analysis
Statistics...
OK
Paste
Reset
Cancel
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
factor analysis d...
*Output2 [Doc...
steps and scree...
steps screensho...
1:04 PM

Verbal 1 (Information) [inf]
Performance 2 (Coding) ...
Verbal 2 (Similarities) [sim]
Verbal 3 (Arithmetic) [ari]
Verbal 4 (Vocabulary) [v...
Verbal 5 (Comprehensio...

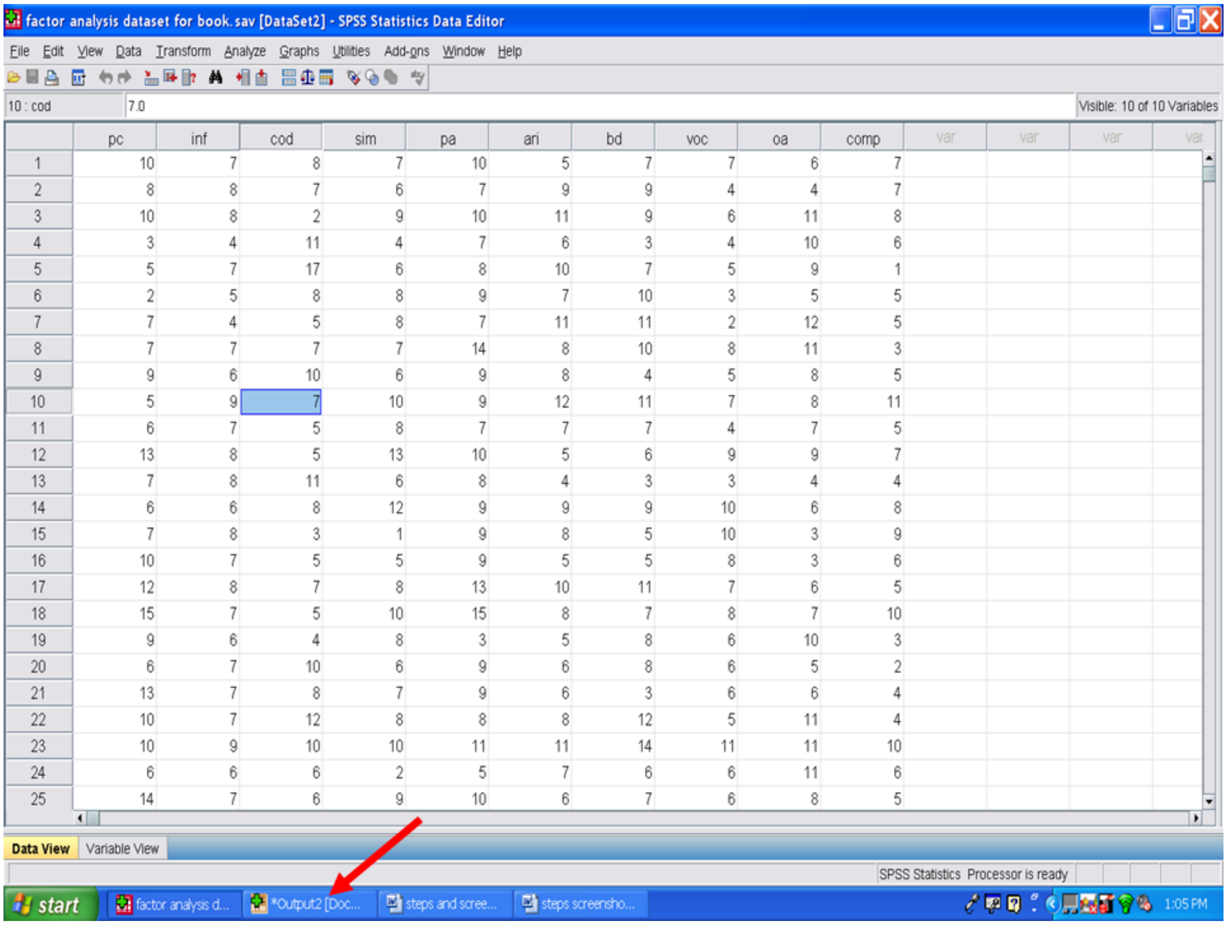
Items:
Performance 1 (Picture ...
Performance 3 (Picture ...
Performance 4 (Block De...
Performance 5 (Object A...

Model: Alpha

Scale label:

	pc							voc	oa	comp
1	10							7	6	7
2	8							4	4	7
3	10							6	11	8
4	3							4	10	6
5	5							5	9	1
6	2							3	5	5
7	7							2	12	5
8	7							8	11	3
9	9							5	8	5
10	5							7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

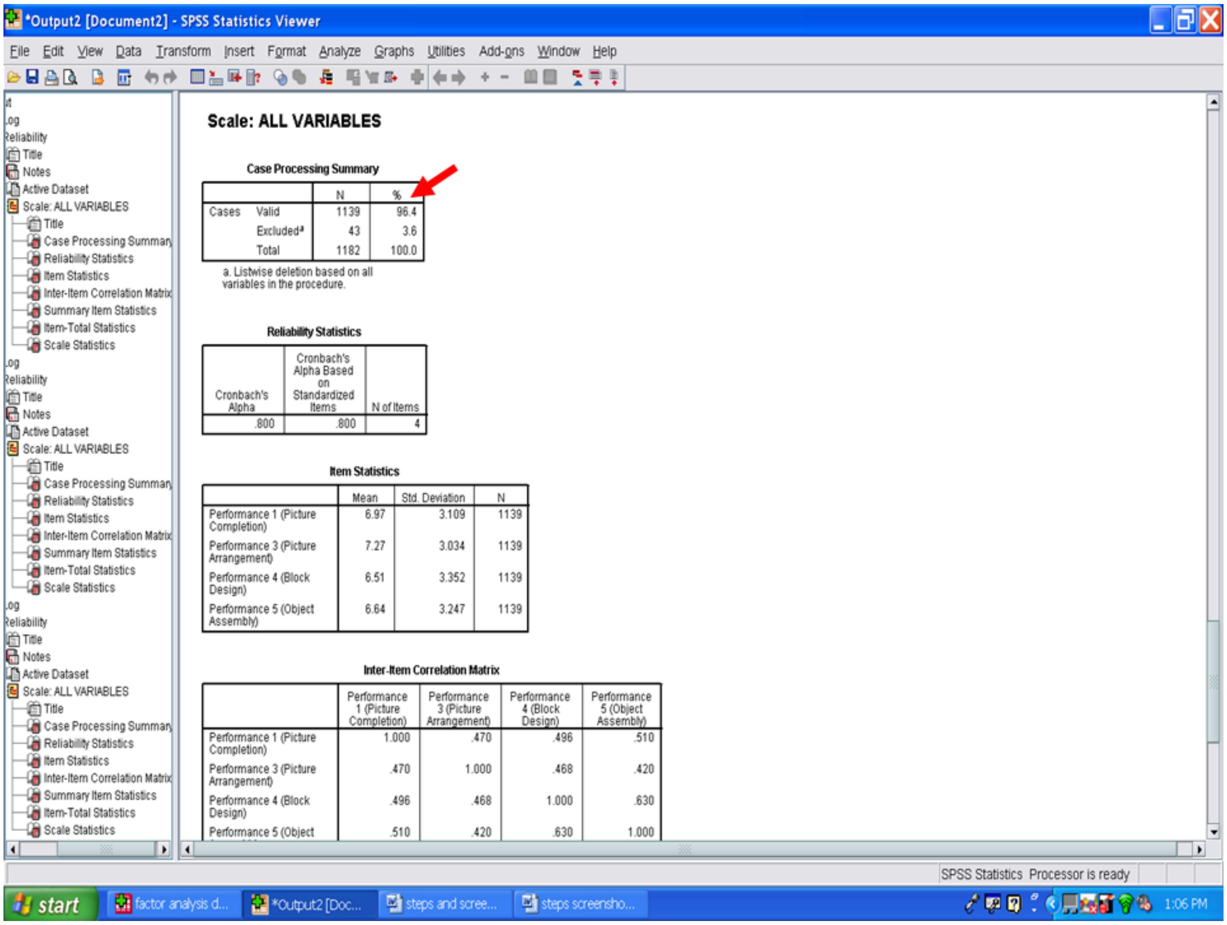
SPSS should place you in the Output window. If not, click on the Output screen icon at the bottom of your screen.



10 : cod 7.0

	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp	var	var	var	var
1	10	7	8	7	10	5	7	7	6	7				
2	8	8	7	6	7	9	9	4	4	7				
3	10	8	2	9	10	11	9	6	11	8				
4	3	4	11	4	7	6	3	4	10	6				
5	5	7	17	6	8	10	7	5	9	1				
6	2	5	8	8	9	7	10	3	5	5				
7	7	4	5	8	7	11	11	2	12	5				
8	7	7	7	7	14	8	10	8	11	3				
9	9	6	10	6	9	8	4	5	8	5				
10	5	9	7	10	9	12	11	7	8	11				
11	6	7	5	8	7	7	7	4	7	5				
12	13	8	5	13	10	5	6	9	9	7				
13	7	8	11	6	8	4	3	3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

In the output screen, the first table you will see is the Case Processing Summary. In this example, 1,139 cases were used out of the total sample of 1,182 cases.



Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	1139	96.4
	Excluded[a]	43	3.6
	Total	1182	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.800	.800	4

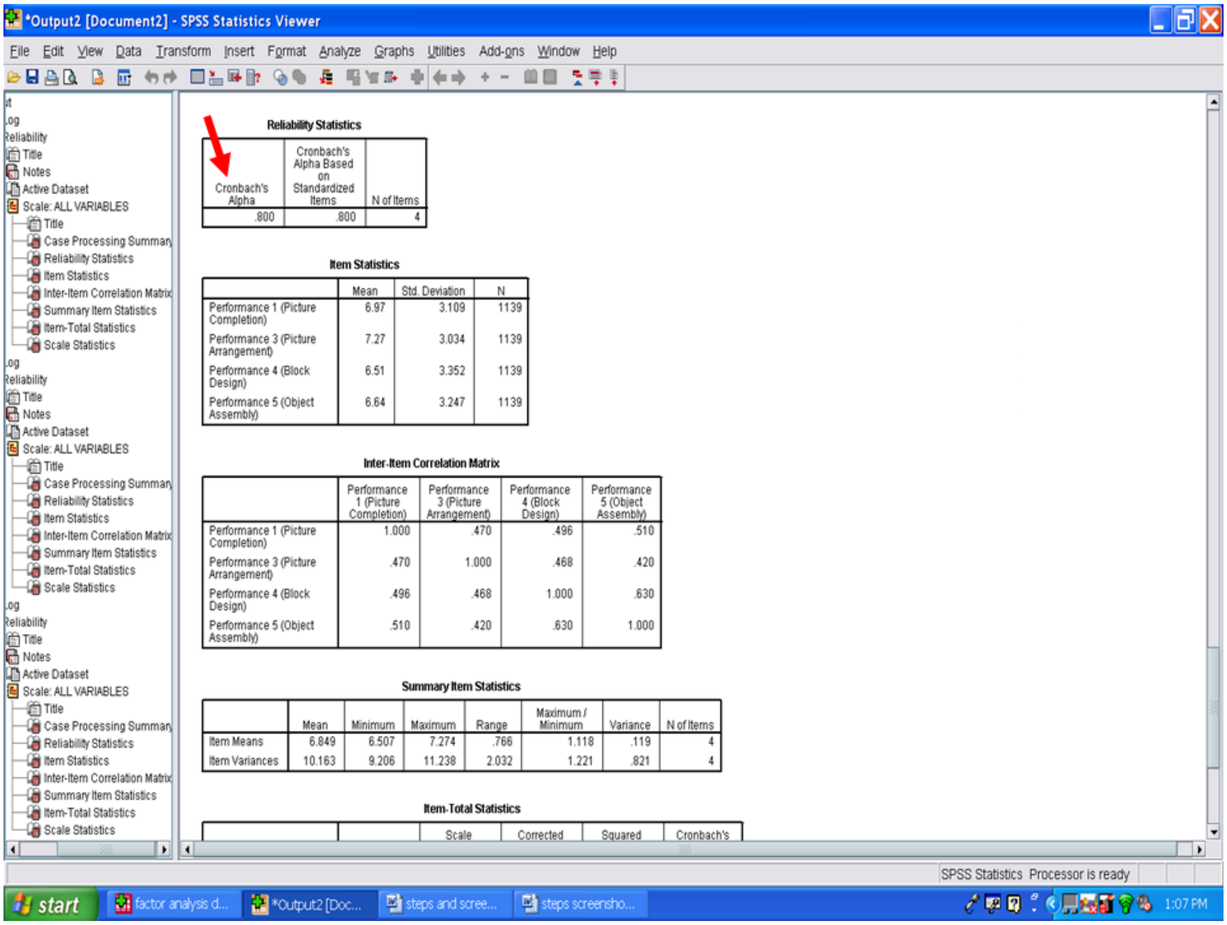
Item Statistics

	Mean	Std. Deviation	N
Performance 1 (Picture Completion)	6.97	3.109	1139
Performance 3 (Picture Arrangement)	7.27	3.034	1139
Performance 4 (Block Design)	6.51	3.352	1139
Performance 5 (Object Assembly)	6.64	3.247	1139

Inter-Item Correlation Matrix

	Performance 1 (Picture Completion)	Performance 3 (Picture Arrangement)	Performance 4 (Block Design)	Performance 5 (Object Assembly)
Performance 1 (Picture Completion)	1.000	.470	.496	.510
Performance 3 (Picture Arrangement)	.470	1.000	.468	.420
Performance 4 (Block Design)	.496	.468	1.000	.630
Performance 5 (Object	.510	.420	.630	1.000

The overall internal consistency of the scores of these four Performance subscales is located in the Reliability Statistics table. In this example, Cronbach's Coefficient Alpha is .800.


*Output2 [Document2] - SPSS Statistics Viewer
File Edit View Data Transform Insert Format Analyze Graphs Utilities Add-ons Window Help
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factor analysis d...
*Output2 [Doc...
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steps screensho...
1:07 PM

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.800	.800	4

Item Statistics

	Mean	Std. Deviation	N
Performance 1 (Picture Completion)	6.97	3.109	1139
Performance 3 (Picture Arrangement)	7.27	3.034	1139
Performance 4 (Block Design)	6.51	3.352	1139
Performance 5 (Object Assembly)	6.64	3.247	1139

Inter-Item Correlation Matrix

	Performance 1 (Picture Completion)	Performance 3 (Picture Arrangement)	Performance 4 (Block Design)	Performance 5 (Object Assembly)
Performance 1 (Picture Completion)	1.000	.470	.496	.510
Performance 3 (Picture Arrangement)	.470	1.000	.468	.420
Performance 4 (Block Design)	.496	.468	1.000	.630
Performance 5 (Object Assembly)	.510	.420	.630	1.000

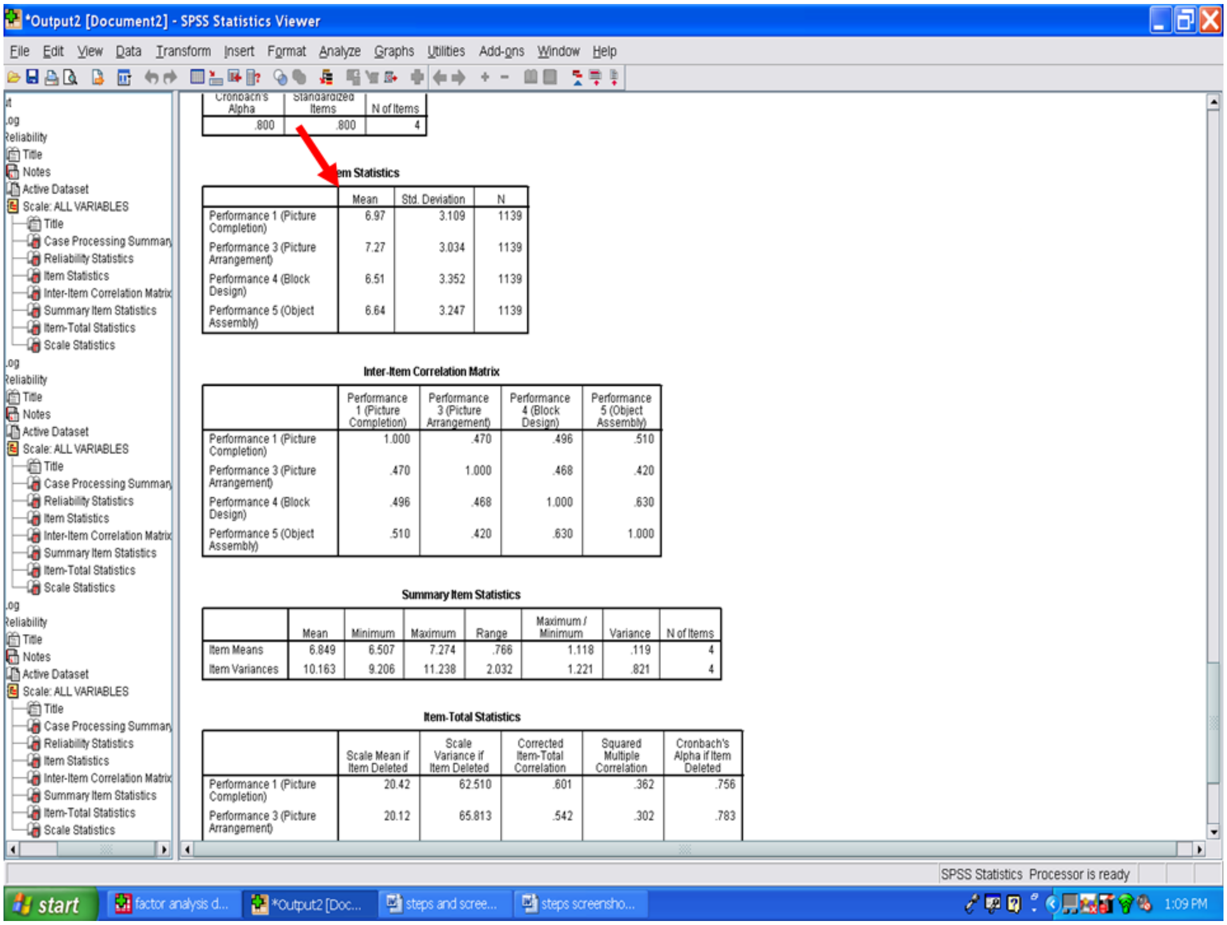
Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	6.849	6.507	7.274	.766	1.118	.119	4
Item Variances	10.163	9.206	11.238	2.032	1.221	.821	4

Item-Total Statistics

		Scale	Corrected	Squared	Cronbach's

The next table labeled Item Statistics contains the descriptive statistics for these four Performance subscales for the sample of 1,139 persons.



Cronbach's Alpha	Standardized Items	N of Items
.800	.800	4

em Statistics

	Mean	Std. Deviation	N
Performance 1 (Picture Completion)	6.97	3.109	1139
Performance 3 (Picture Arrangement)	7.27	3.034	1139
Performance 4 (Block Design)	6.51	3.352	1139
Performance 5 (Object Assembly)	6.64	3.247	1139

Inter-Item Correlation Matrix

	Performance 1 (Picture Completion)	Performance 3 (Picture Arrangement)	Performance 4 (Block Design)	Performance 5 (Object Assembly)
Performance 1 (Picture Completion)	1.000	.470	.496	.510
Performance 3 (Picture Arrangement)	.470	1.000	.468	.420
Performance 4 (Block Design)	.496	.468	1.000	.630
Performance 5 (Object Assembly)	.510	.420	.630	1.000

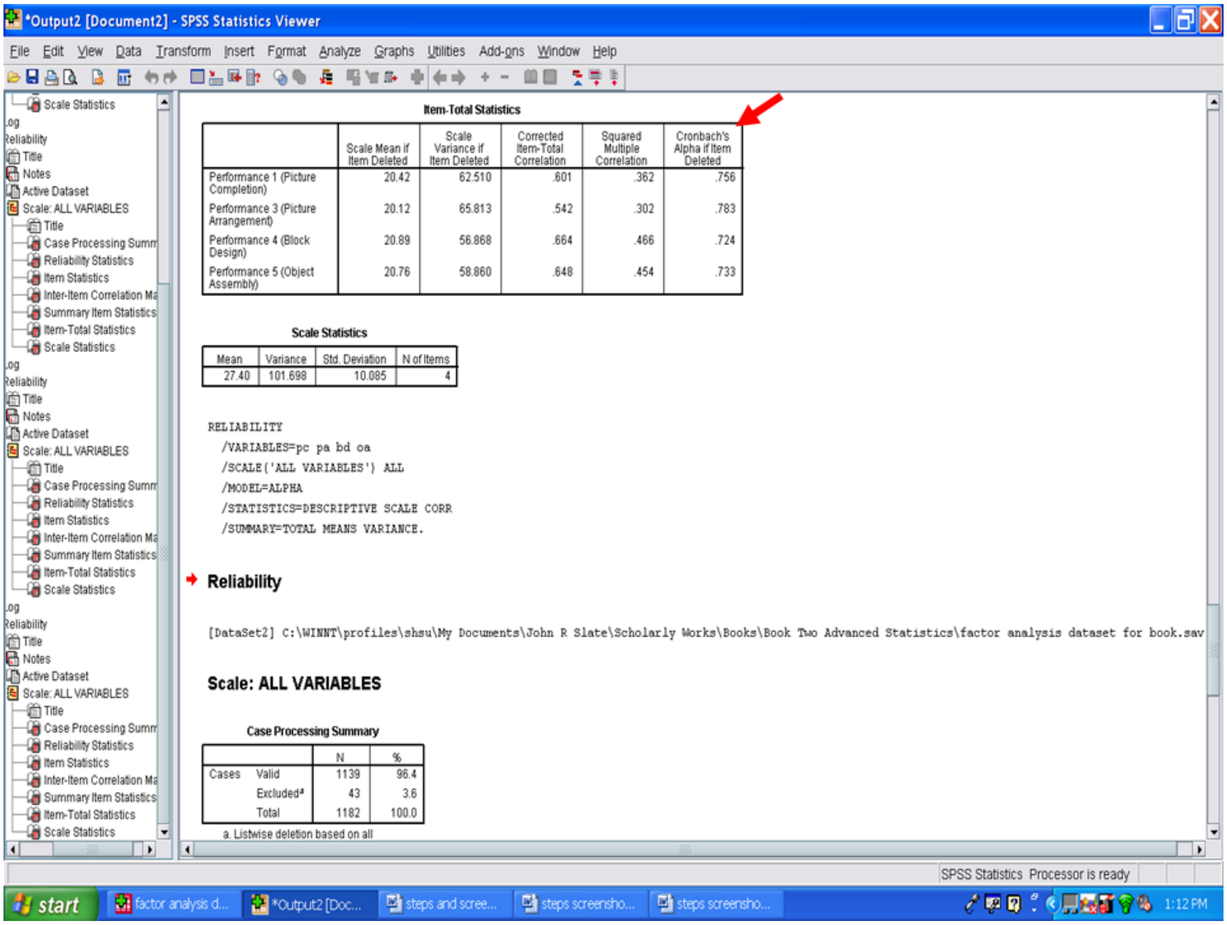
Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	6.849	6.507	7.274	.766	1.118	.119	4
Item Variances	10.163	9.206	11.238	2.032	1.221	.821	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Performance 1 (Picture Completion)	20.42	62.510	.601	.362	.756
Performance 3 (Picture Arrangement)	20.12	65.813	.542	.302	.783

In the next table of importance, labeled Item-Total Statistics, locate the far right column of this table. This column, titled as Cronbach's Alpha if Item Deleted, indicates how much of a change in internal consistency would occur if you deleted that variable from the group. As our Cronbach's Coefficient Alpha for all four Performance subscales was .800, as previously noted, no increase occurs in the internal consistency if any of these subscales are deleted.



Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Performance 1 (Picture Completion)	20.42	62.510	.601	.362	.756
Performance 3 (Picture Arrangement)	20.12	65.813	.542	.302	.783
Performance 4 (Block Design)	20.89	56.868	.664	.466	.724
Performance 5 (Object Assembly)	20.76	58.860	.648	.454	.733

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
27.40	101.698	10.085	4

```
RELIABILITY
  /VARIABLES=pc pa bd oa
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

```
[DataSet2] C:\WINNT\profiles\shsu\My Documents\John R Slate\Scholarly Works\Books\Book Two Advanced Statistics\factor analysis dataset for book.sav
```

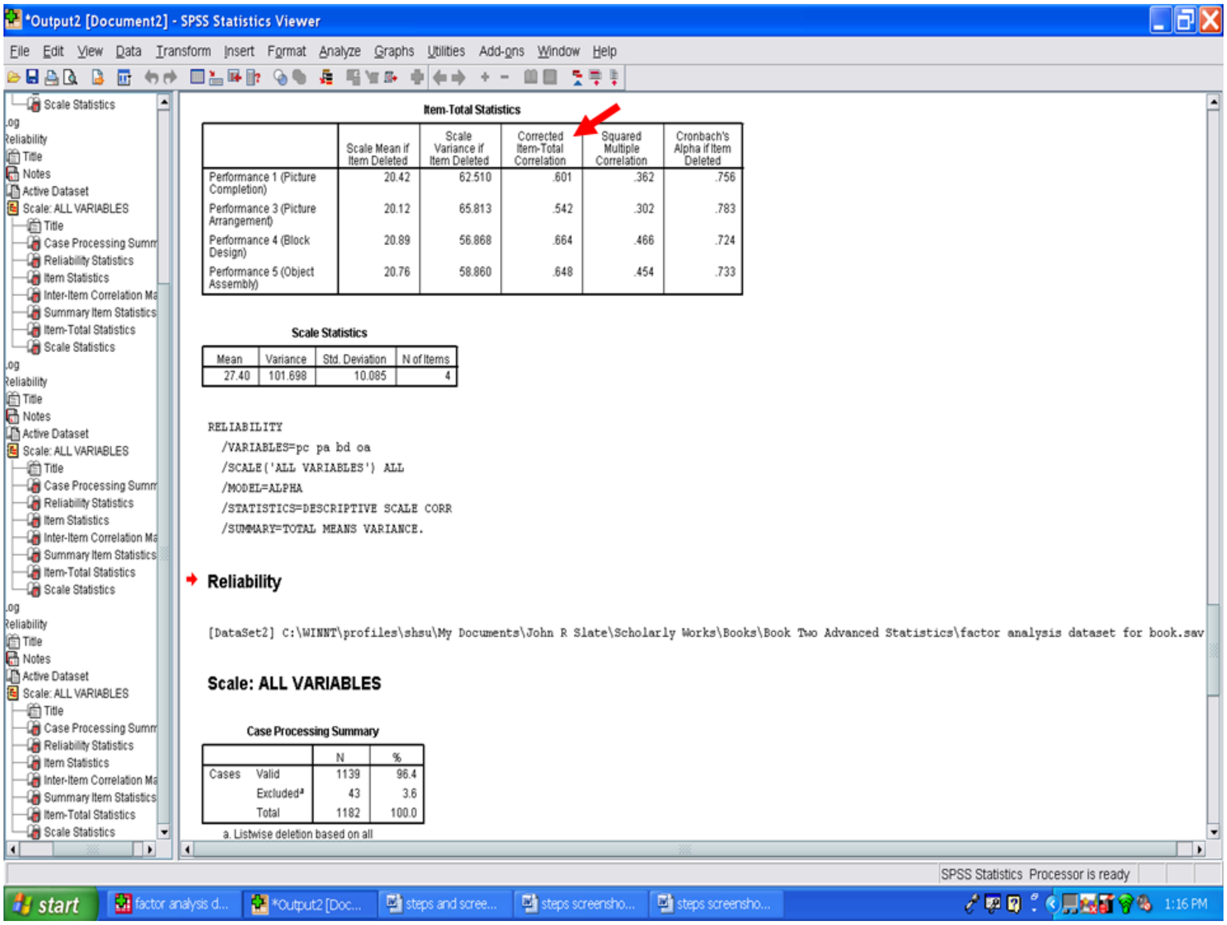
Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	1139	96.4
	Excluded^a	43	3.6
	Total	1182	100.0

a. Listwise deletion based on all

The next column in this table that we examine is the one labeled Corrected Item-Total Correlation. These values indicate the extent to which each variable is related with the group of variables, in this case with the total of the Performance subscales. The higher the correlation, the more that item/variable is associated with the total of the group. The values in this column reflect that these four Performance subscales are consistently contributing to the measurement of the same/similar construct.



Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Performance 1 (Picture Completion)	20.42	62.510	.601	.362	.756
Performance 3 (Picture Arrangement)	20.12	65.813	.542	.302	.783
Performance 4 (Block Design)	20.89	56.868	.664	.466	.724
Performance 5 (Object Assembly)	20.76	58.860	.648	.454	.733

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
27.40	101.698	10.085	4

```
RELIABILITY
  /VARIABLES=pc pa bd oa
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL MEANS VARIANCE.
```

Reliability

```
[DataSet2] C:\WINNT\profiles\shsu\My Documents\John R Slate\Scholarly Works\Books\Book Two Advanced Statistics\factor analysis dataset for book.sav
```

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	1139	96.4
	Excluded[a]	43	3.6
	Total	1182	100.0

a. Listwise deletion based on all

In the case of the four Performance subscales, all four subscales may be regarded as providing internally consistent scores. Moreover, their scores can be aggregated or added together to create a composite score. See our chapter on data transformation – creating a new variable.

Now that we have determined the internal consistency of the scores from the Verbal subscales and of the scores from the Performance subscales, a name needs to be assigned to each of these two factors. Naming the factor involves interpreting the pattern/structure coefficients from the factor analysis that was described in the factor analysis chapter. All significant pattern/structure coefficients are typically used in the interpretation process. Variables with higher coefficients influence to a greater extent the name or label selected to represent a factor. Naming of factors is NOT very scientific and is based on the subjective opinion of the analyst---naming is open to criticism.

Factor Analysis: Part I

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

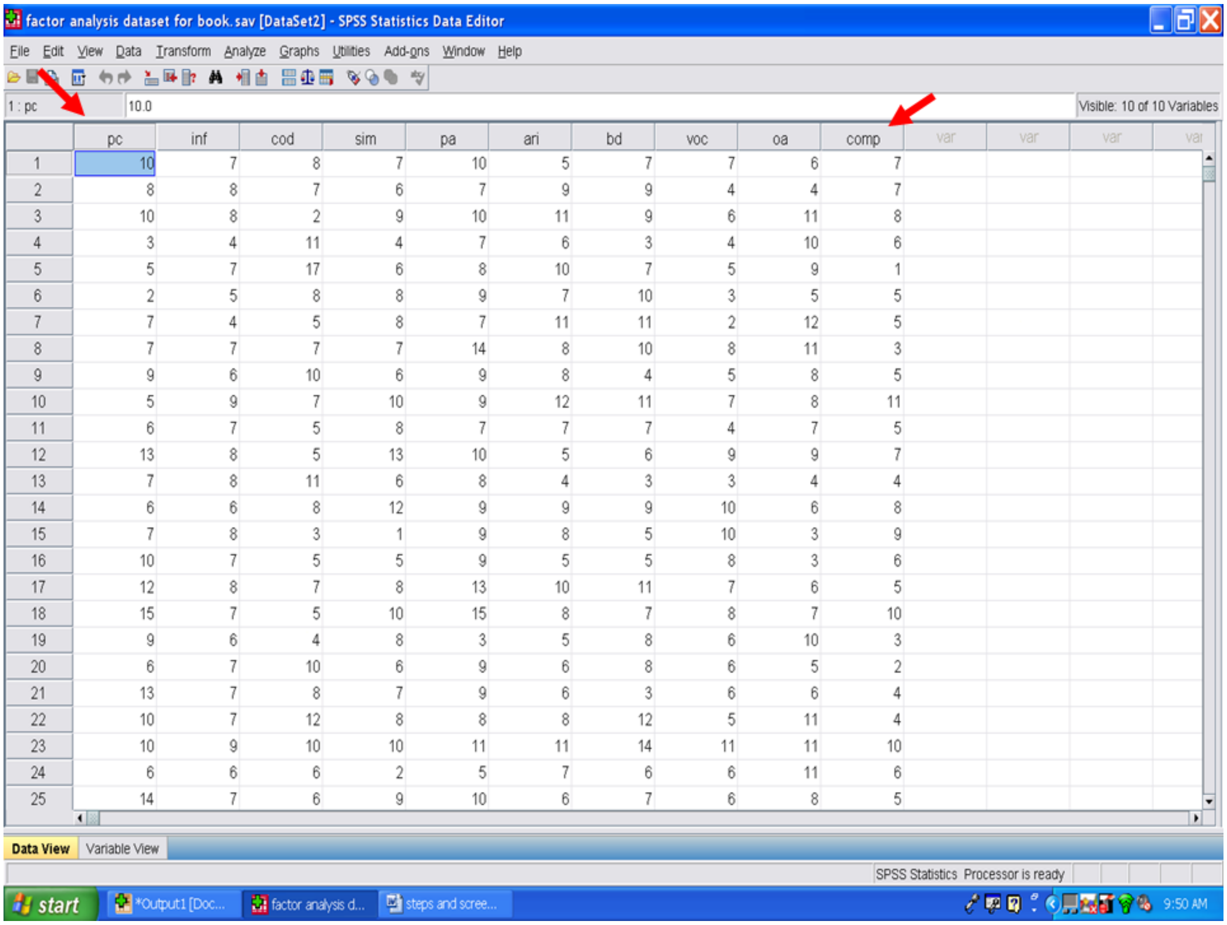
About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

In this set of steps, readers will conduct a factor analysis procedure, in particular, a Varimax factor analysis. For detailed information regarding the assumptions underlying use of a factor analysis and reasons for using a Varimax factor analysis, readers are referred to the Hyperstats Online Statistics Textbook at http://davidmlane.com/hyperstat/ ; to the *Electronic Statistics Textbook* (2011) at http://www.statsoft.com/textbook/ ; or to Andy Field's (2009) Discovering Statistics Using SPSS at http://www.amazon.com/Discovering-Statistics-Introducing-Statistical-Method/dp/1847879071/ref=sr_1_1?s=books&ie=UTF8&qid=1304967862&sr=1-1

Research questions for which a factor analysis procedure is appropriate involve analyzing a survey or an instrument in which multiple scores are present. For example, if a 100-item survey is administered, it is not feasible nor is it desirable to conduct 100 separate *t*-tests or to calculate all of the possible intercorrelations. Rather, the 100 items on the survey should be collapsed or aggregated in some manner. Use of a factor analysis permits the clustering of items into coherent and logical clusters which can then be analyzed through use of multivariate statistical procedures. As such, factor analysis procedures do not directly answer inferential research questions. Instead they serve as precursors to other statistical methods.

For this particular chapter, we will conduct a factor analysis of the 10 subscales of the Wechsler Intelligence Scale for Children-Third Edition. The 10 subscales are shown below: Picture Completion (pc), Information (inf), Coding (cod), Similarities (sim), Picture Arrangement (pa), Arithmetic (ari), Block Design (bd), Vocabulary (voc), Object Assembly (oa), and Comprehension (comp). Prior to conducting a factor analysis, you should have verified the accuracy of your data.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
Visible: 10 of 10 Variables
var
var
var
var
Data View
Variable View
SPSS Statistics Processor is ready
start
*Output1 [Doc...
factor analysis d...
steps and scree...
9:50 AM

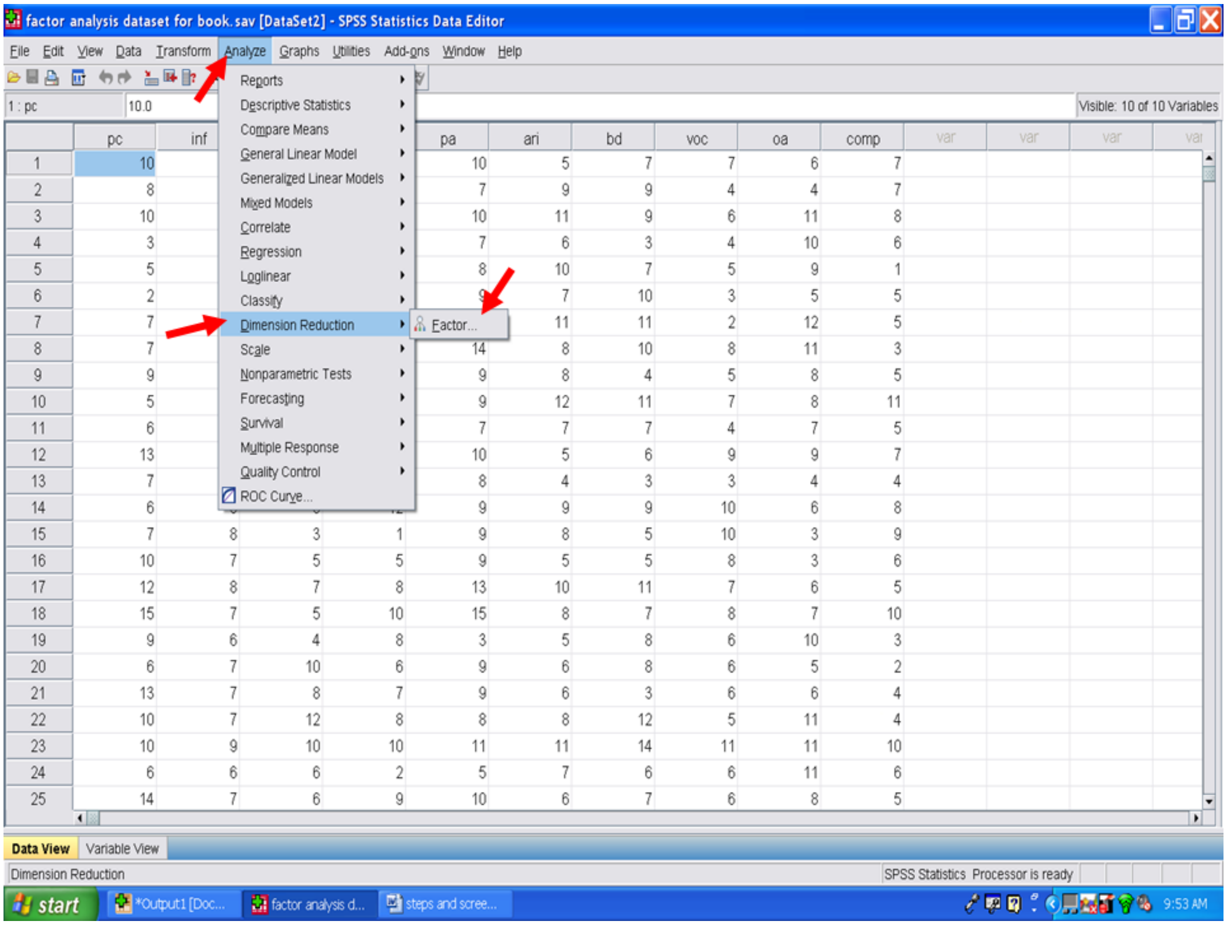
	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp
1	10	7	8	7	10	5	7	7	6	7
2	8	8	7	6	7	9	9	4	4	7
3	10	8	2	9	10	11	9	6	11	8
4	3	4	11	4	7	6	3	4	10	6
5	5	7	17	6	8	10	7	5	9	1
6	2	5	8	8	9	7	10	3	5	5
7	7	4	5	8	7	11	11	2	12	5
8	7	7	7	7	14	8	10	8	11	3
9	9	6	10	6	9	8	4	5	8	5
10	5	9	7	10	9	12	11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

In this example, we will click on

Analyze

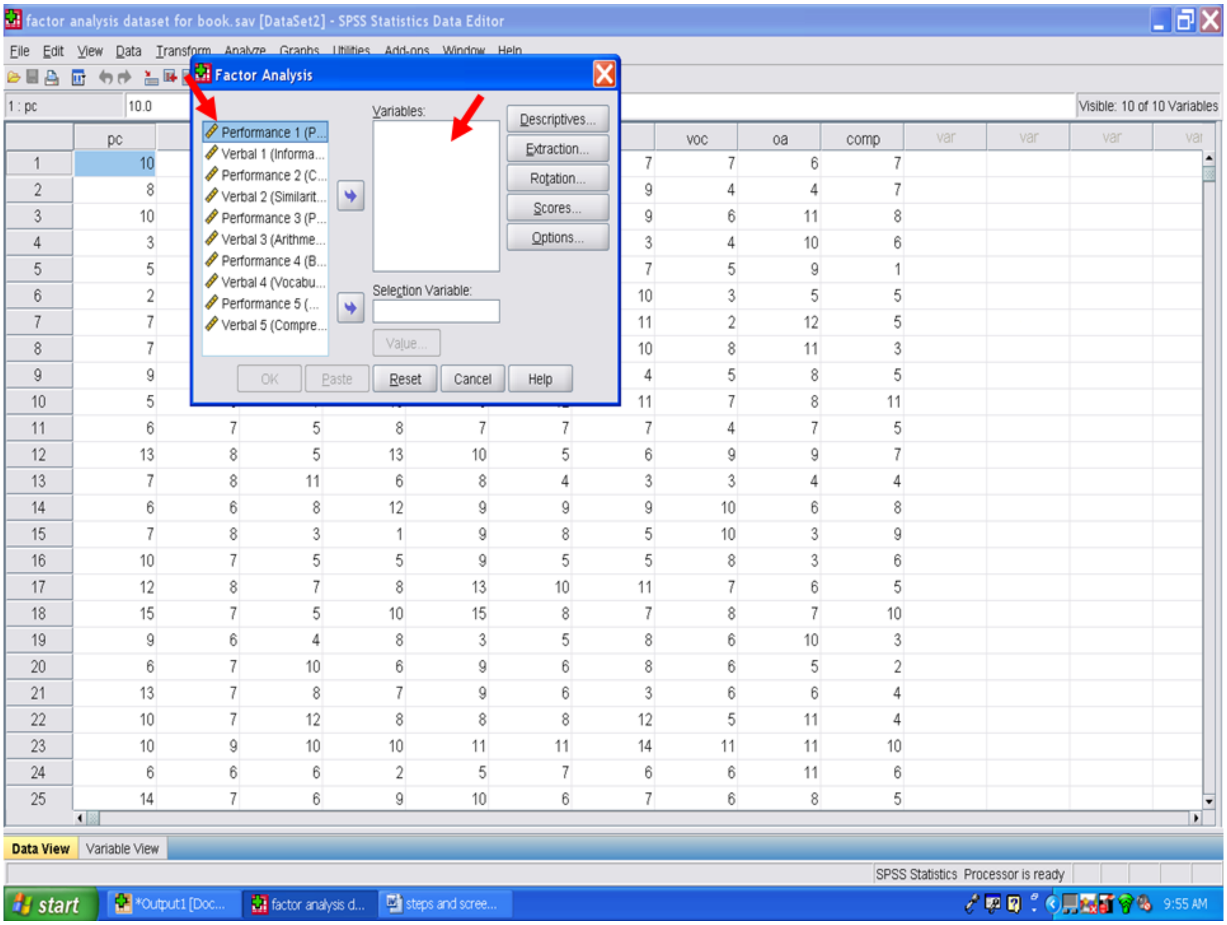
Dimension Reduction

Factor



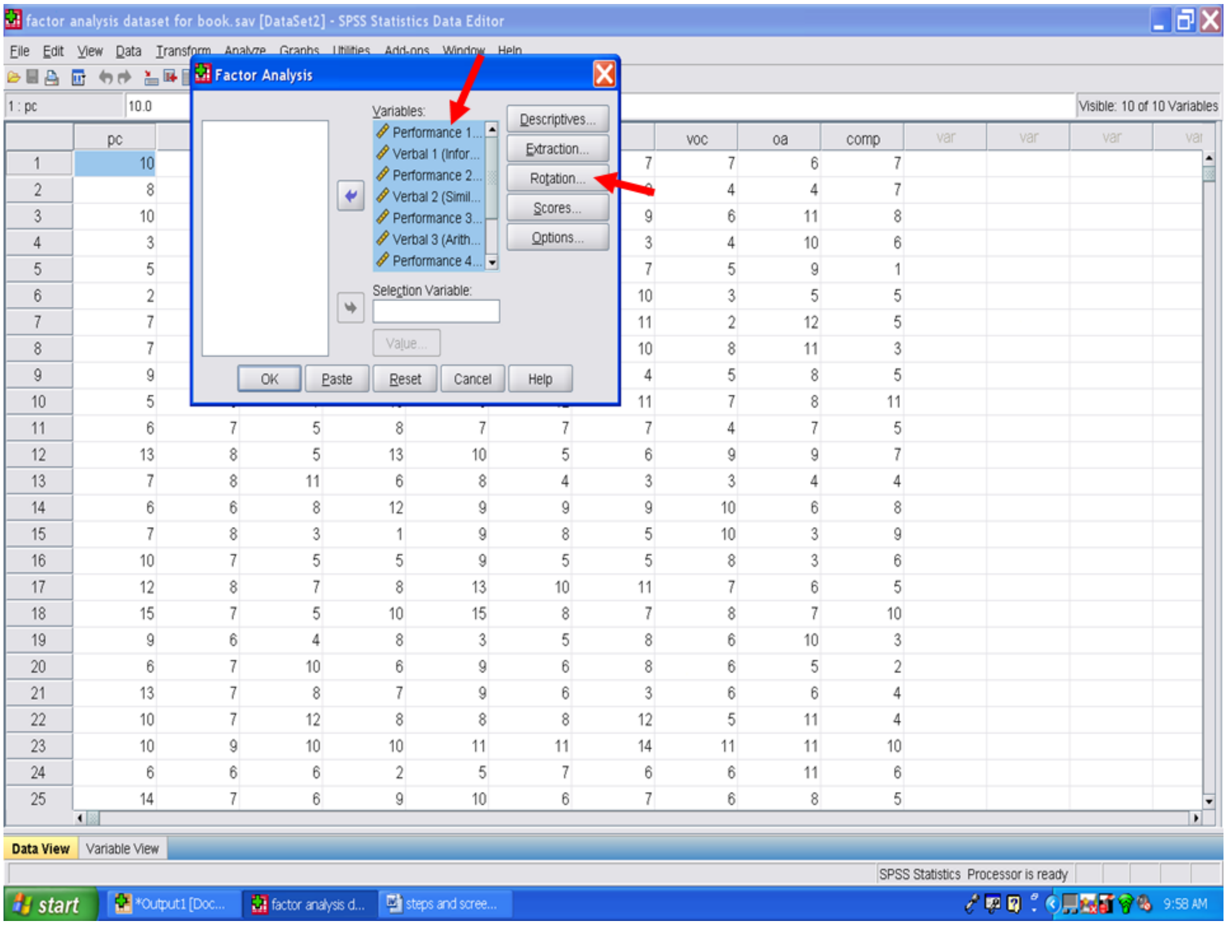
	pc	inf			pa	ari	bd	voc	oa	comp
1	10				10	5	7	7	6	7
2	8				7	9	9	4	4	7
3	10				10	11	9	6	11	8
4	3				7	6	3	4	10	6
5	5				8	10	7	5	9	1
6	2				9	7	10	3	5	5
7	7					11	11	2	12	5
8	7				14	8	10	8	11	3
9	9				9	8	4	5	8	5
10	5				9	12	11	7	8	11
11	6				7	7	7	4	7	5
12	13				10	5	6	9	9	7
13	7				8	4	3	3	4	4
14	6				9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

After clicking on factor, the following screen will appear. The variables on which you want a factor analysis conducted should be sent into the box titled Variables. In our example, we will send all 10 of the subscales into the Variables box.



	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

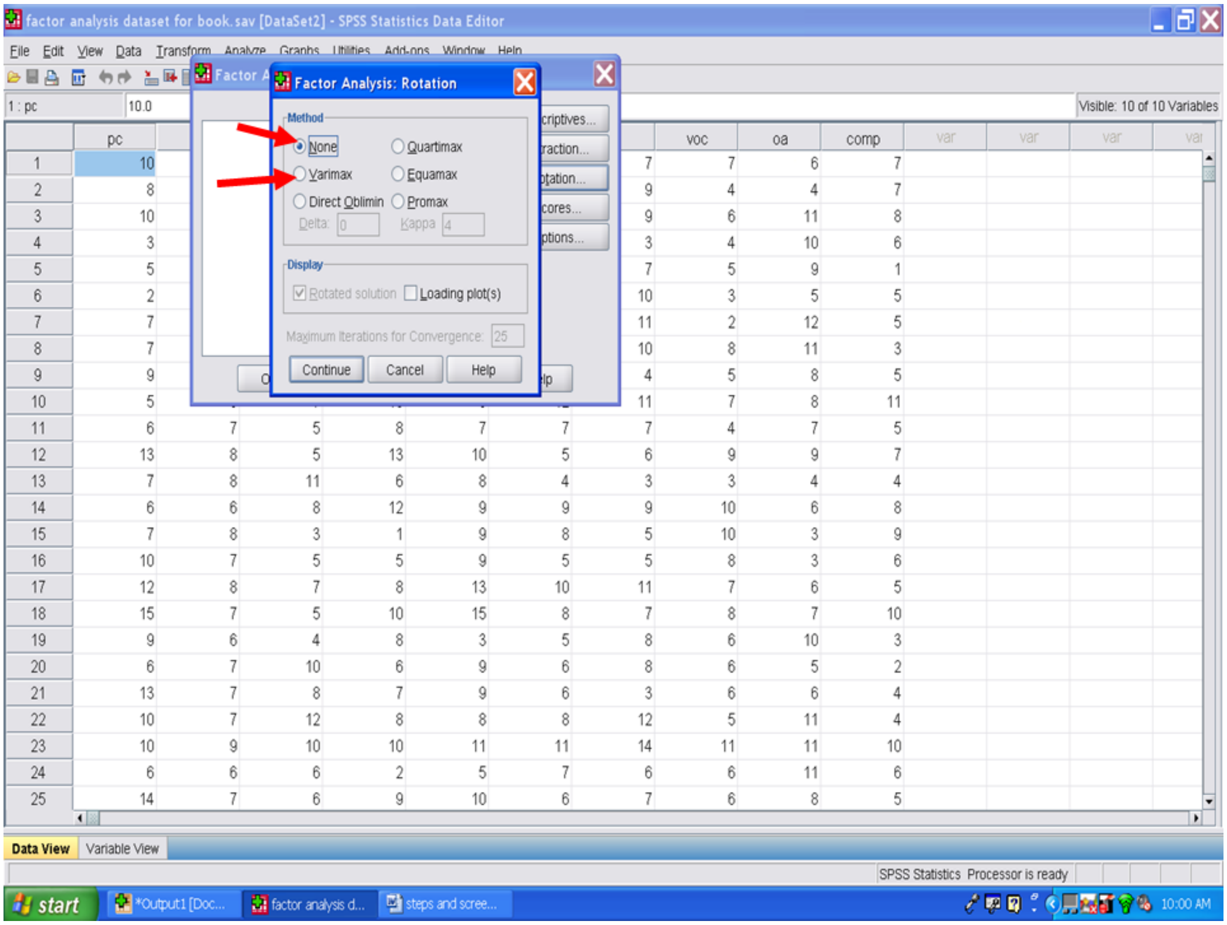
Once all of the subscales on which you want the factor analysis conducted have been placed into the Variables box, click on Rotation.



1 : pc 10.0

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						[illegible]	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

After clicking on Rotation, the following screen will appear. Under Method, the box for None is already checked because it is the SPSS default value. We will conduct a Varimax factor analysis. Click on Varimax.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
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1 : pc 10.0

Visible: 10 of 10 Variables

Method

● None ○ Quartimax

○ Varimax ○ Equamax

○ Direct Oblimin ○ Promax

Delta: 0 Kappa 4

Display

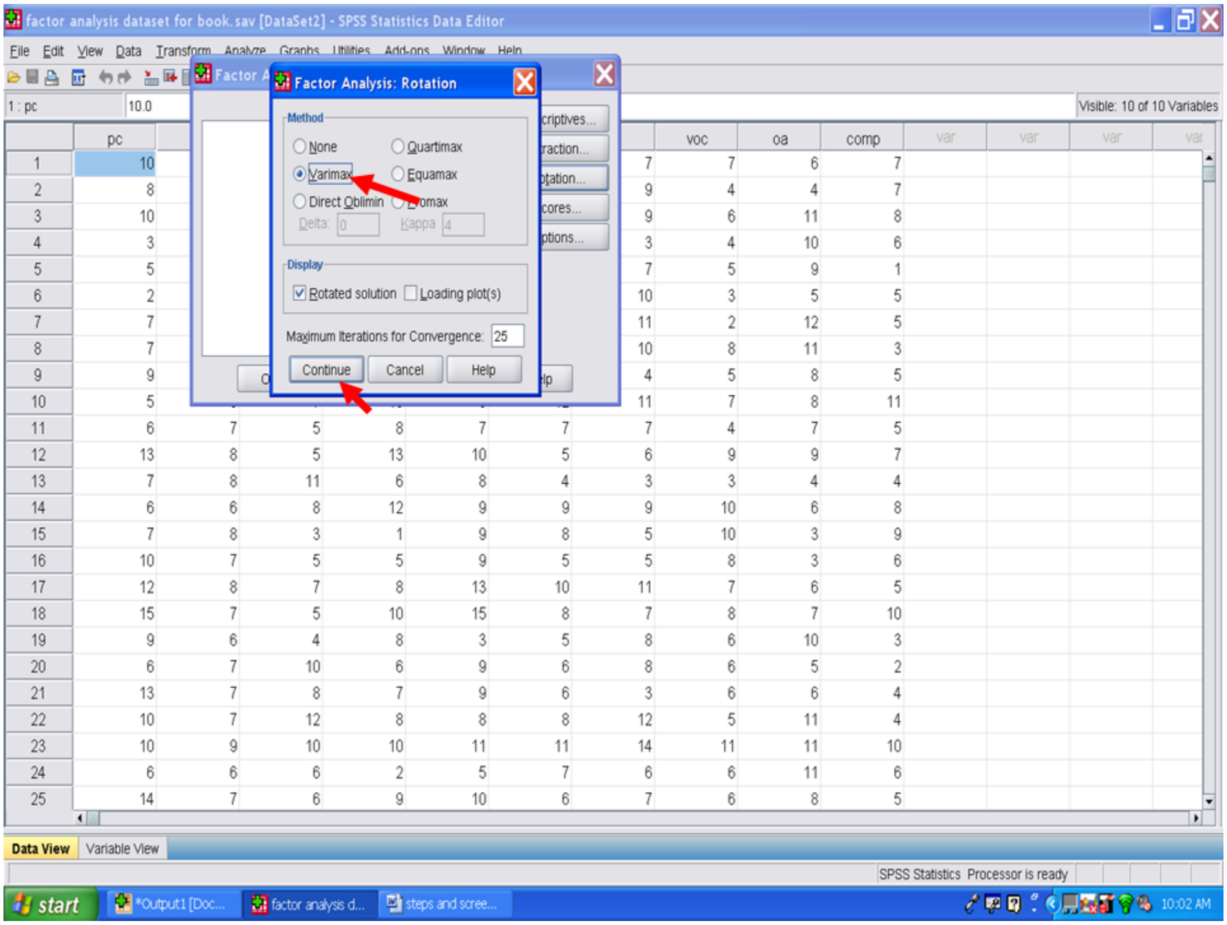
☑ Rotated solution ☐ Loading plot(s)

Maximum Iterations for Convergence: 25

	pc							voc	oa	comp	var	var	var	var
1	10						7	7	6	7				
2	8						9	4	4	7				
3	10						9	6	11	8				
4	3						3	4	10	6				
5	5						7	5	9	1				
6	2						10	3	5	5				
7	7						11	2	12	5				
8	7						10	8	11	3				
9	9						4	5	8	5				
10	5						11	7	8	11				
11	6	7	5	8	7	7	7	4	7	5				
12	13	8	5	13	10	5	6	9	9	7				
13	7	8	11	6	8	4	3	3	4	4				
14	6	6	8	12	9	9	9	10	6	8				
15	7	8	3	1	9	8	5	10	3	9				
16	10	7	5	5	9	5	5	8	3	6				
17	12	8	7	8	13	10	11	7	6	5				
18	15	7	5	10	15	8	7	8	7	10				
19	9	6	4	8	3	5	8	6	10	3				
20	6	7	10	6	9	6	8	6	5	2				
21	13	7	8	7	9	6	3	6	6	4				
22	10	7	12	8	8	8	12	5	11	4				
23	10	9	10	10	11	11	14	11	11	10				
24	6	6	6	2	5	7	6	6	11	6				
25	14	7	6	9	10	6	7	6	8	5				

SPSS Statistics Processor is ready

Varimax has been clicked below. Click on Continue.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
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Factor A
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Variable View
SPSS Statistics Processor is ready
start
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factor analysis d...
steps and scree...
10:02 AM

Factor Analysis: Rotation

Method

○ None ○ Quartimax

● Varimax ○ Equamax

○ Direct Oblimin ○ Promax

Delta: 0 Kappa 4

Display

☑ Rotated solution ☐ Loading plot(s)

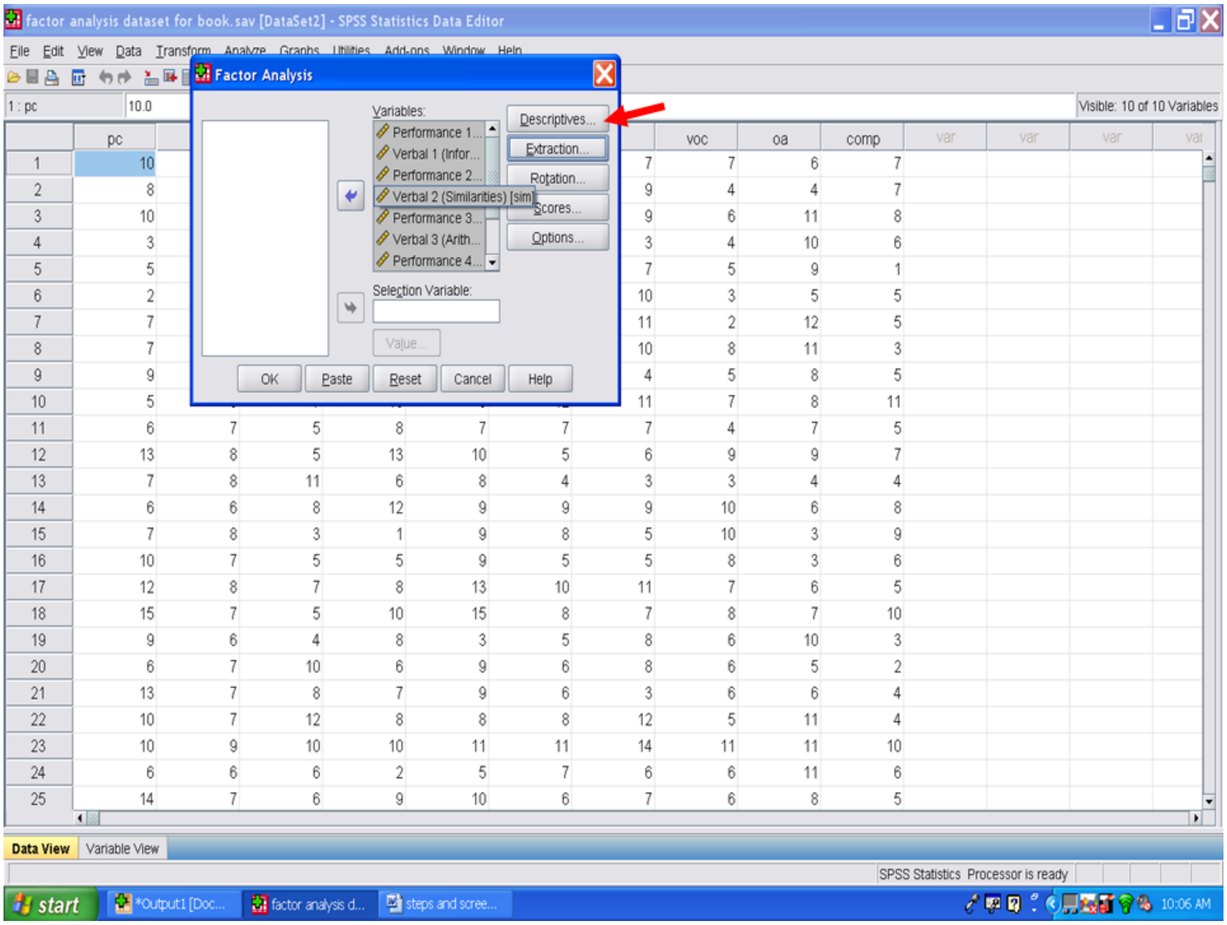
Maximum Iterations for Convergence: 25

Continue Cancel Help

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

The screen below will appear after you have clicked on Continue.

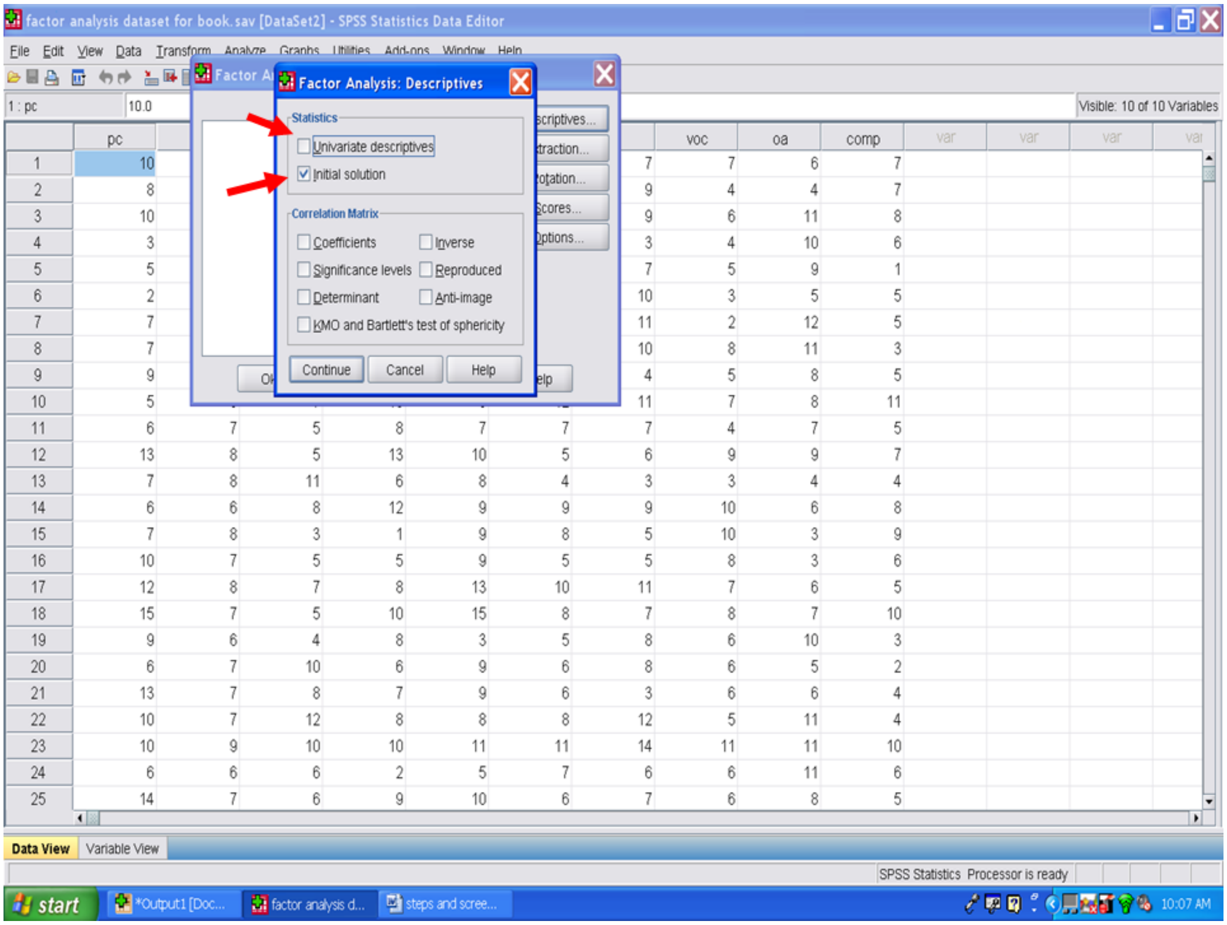
Now click on Descriptives.



	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

Your screen should now look like the one below. Click on Univariate Descriptives.

Unclick Initial Solution.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
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Factor Analysis: Descriptives
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Correlation Matrix
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Scores...
Options...
Data View
Variable View
SPSS Statistics Processor is ready
start
*Output1 [Doc...
factor analysis d...
steps and scree...
10:07 AM

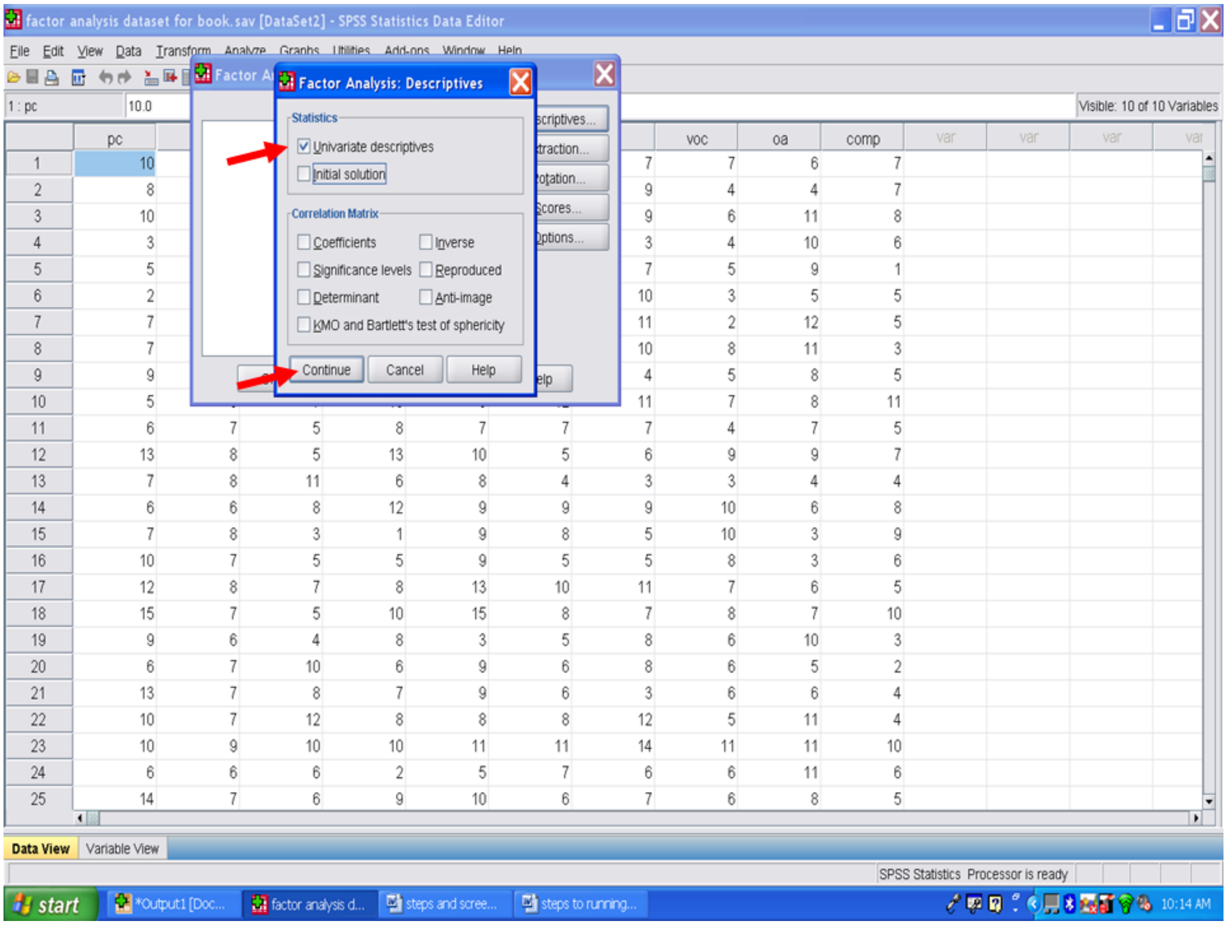
Statistics
☐ Univariate descriptives
☑ Initial solution

Correlation Matrix
☐ Coefficients ☐ Inverse
☐ Significance levels ☐ Reproduced
☐ Determinant ☐ Anti-image
☐ KMO and Bartlett's test of sphericity

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

Your screen will now look like the following screenshot.

Click on Continue.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
1 : pc
10.0
Visible: 10 of 10 Variables
Factor A
Descriptives...
Extraction...
Rotation...
Scores...
Options...
Help
Data View
Variable View
SPSS Statistics Processor is ready
start
*Output1 [Doc...
factor analysis d...
steps and scree...
steps to running...
10:14 AM

Factor Analysis: Descriptives

Statistics

☑ Univariate descriptives

☐ Initial solution

Correlation Matrix

☐ Coefficients ☐ Inverse

☐ Significance levels ☐ Reproduced

☐ Determinant ☐ Anti-image

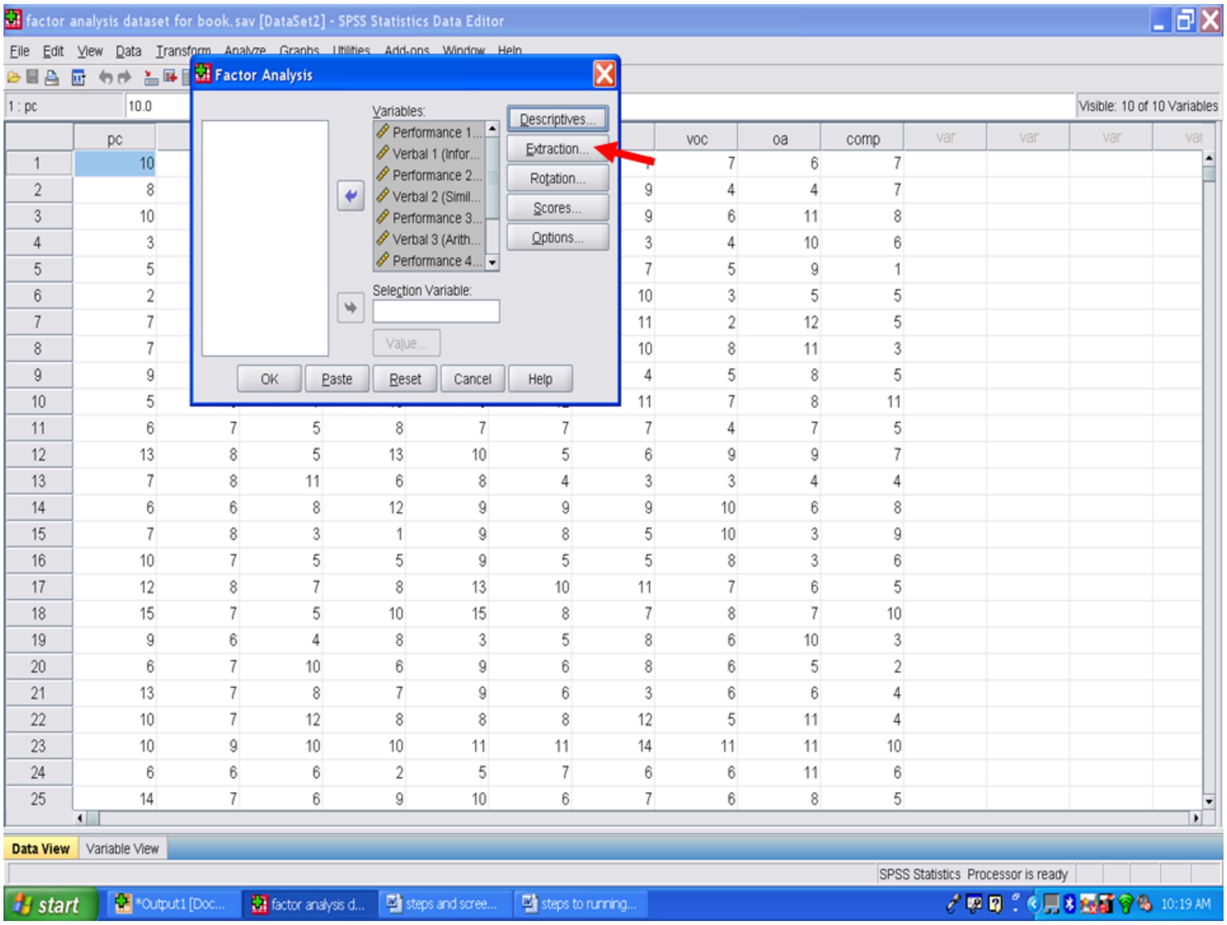
☐ KMO and Bartlett's test of sphericity

Continue | Cancel | Help

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

The following screen should now be present.

Click on Extraction.



	pc							voc	oa	comp
1	10							7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

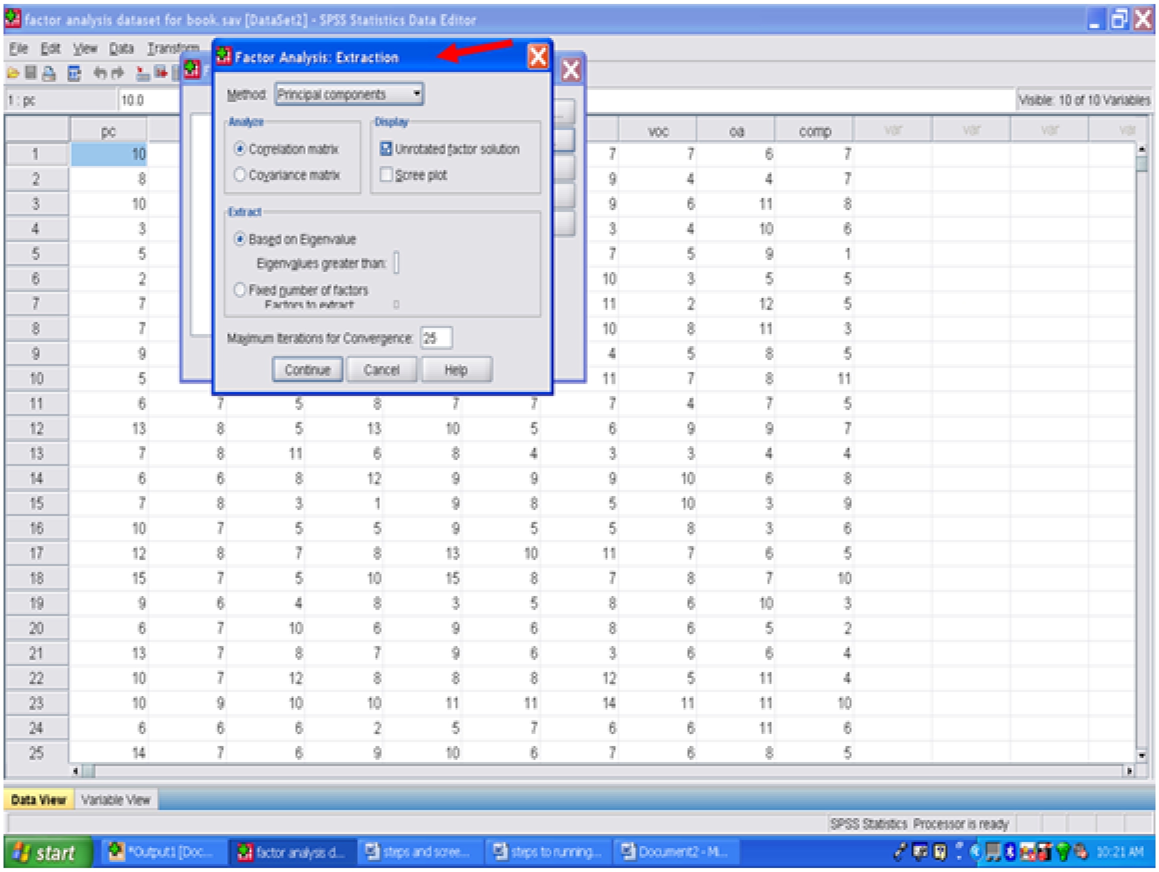
Factor Analysis: Part II

Note: This chapter is published by NCPEA Press and is presented as an NCPEA/Connexions publication "print on demand book." Each chapter has been peer-reviewed, accepted, and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration.

About the Authors

- **John R. Slate** is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website (Writing and Statistical Help) to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.
- **Ana Rojas-LeBouef** is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. Dr. LeBoeuf recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical Help website.

After clicking on Extraction, the following screen should now be present.



Factor Analysis: Extraction

Method: Principal components

Analyze
○ Correlation matrix (selected: ●)
○ Covariance matrix

Display
☑ Unrotated factor solution
☐ Scree plot

Extract
● Based on Eigenvalue
Eigenvalues greater than:
○ Fixed number of factors
Factors to extract:

Maximum Iterations for Convergence: 25

1 : pc 10.0

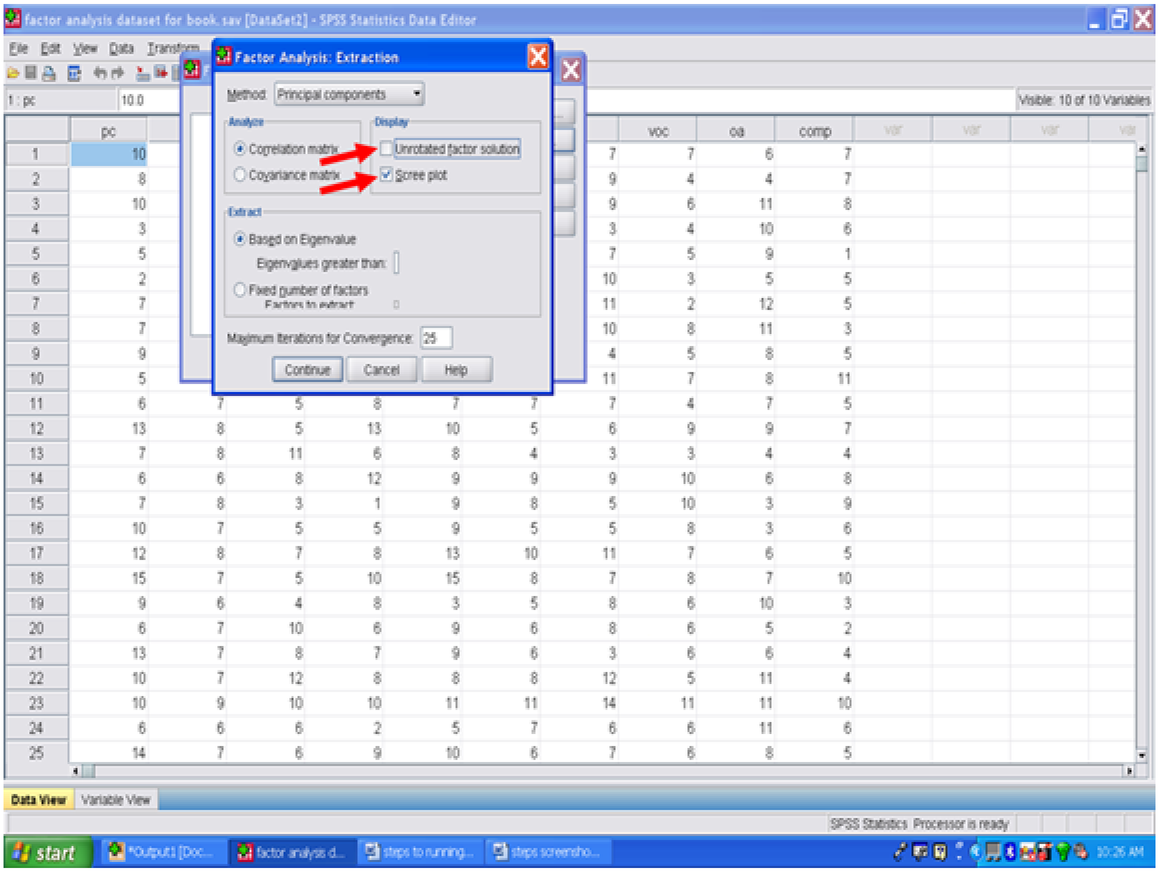
Visible: 10 of 10 Variables

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

SPSS Statistics Processor is ready

Under Display, click on Screen plot.

Unclick the Unrotated factor solution.



Factor Analysis: Extraction

Method: Principal components

Analyze
● Correlation matrix
○ Covariance matrix

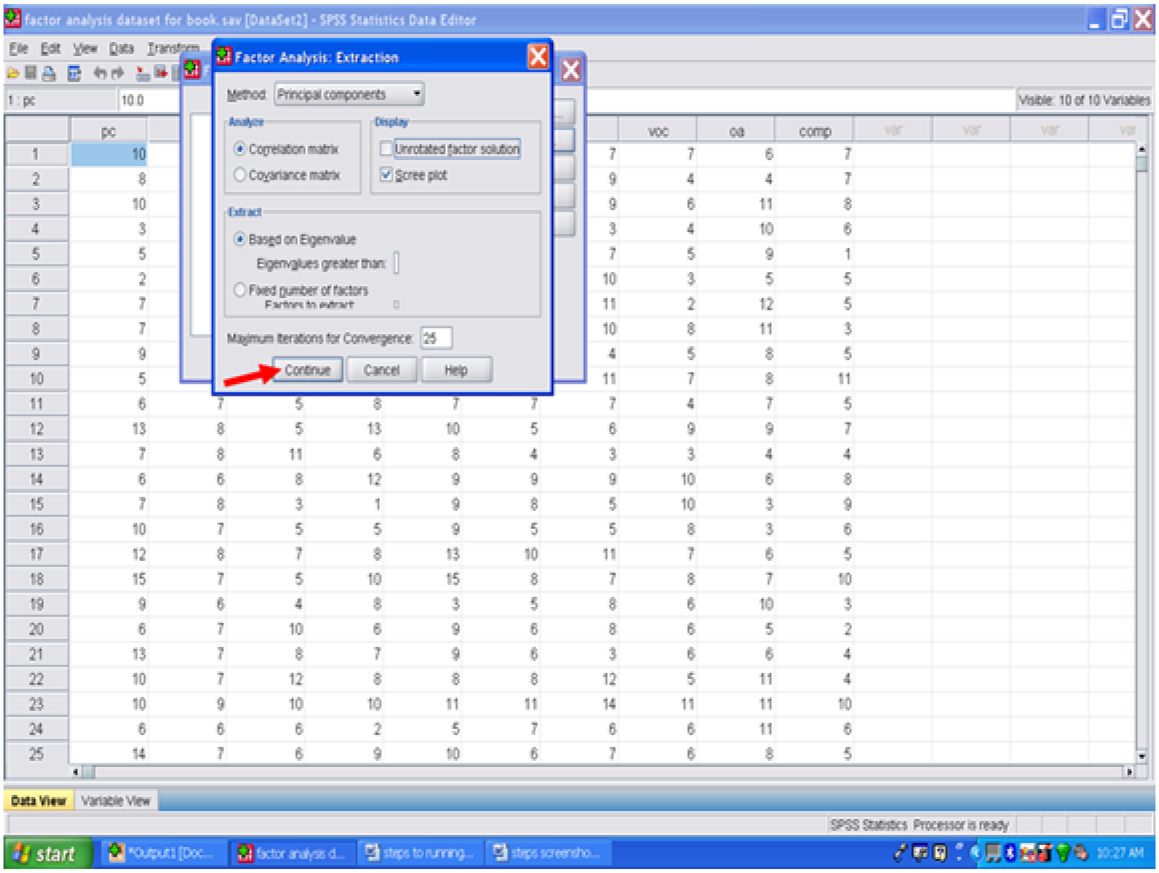
Display
☐ Unrotated factor solution
☑ Scree plot

Extract
● Based on Eigenvalue
Eigenvalues greater than:
○ Fixed number of factors
Factors to extract:

Maximum Iterations for Convergence: 25

	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

Click on Continue.


factor analysis dataset for book.sav [DataSet2] - SPSS Statistics Data Editor
File Edit View Data Transform
1 : pc 10.0
Visible: 10 of 10 Variables
pc
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Variable View
SPSS Statistics Processor is ready
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steps to running...
steps screensho...
10:27 AM

Factor Analysis: Extraction

Method: Principal components

Analyze
● Correlation matrix
○ Covariance matrix

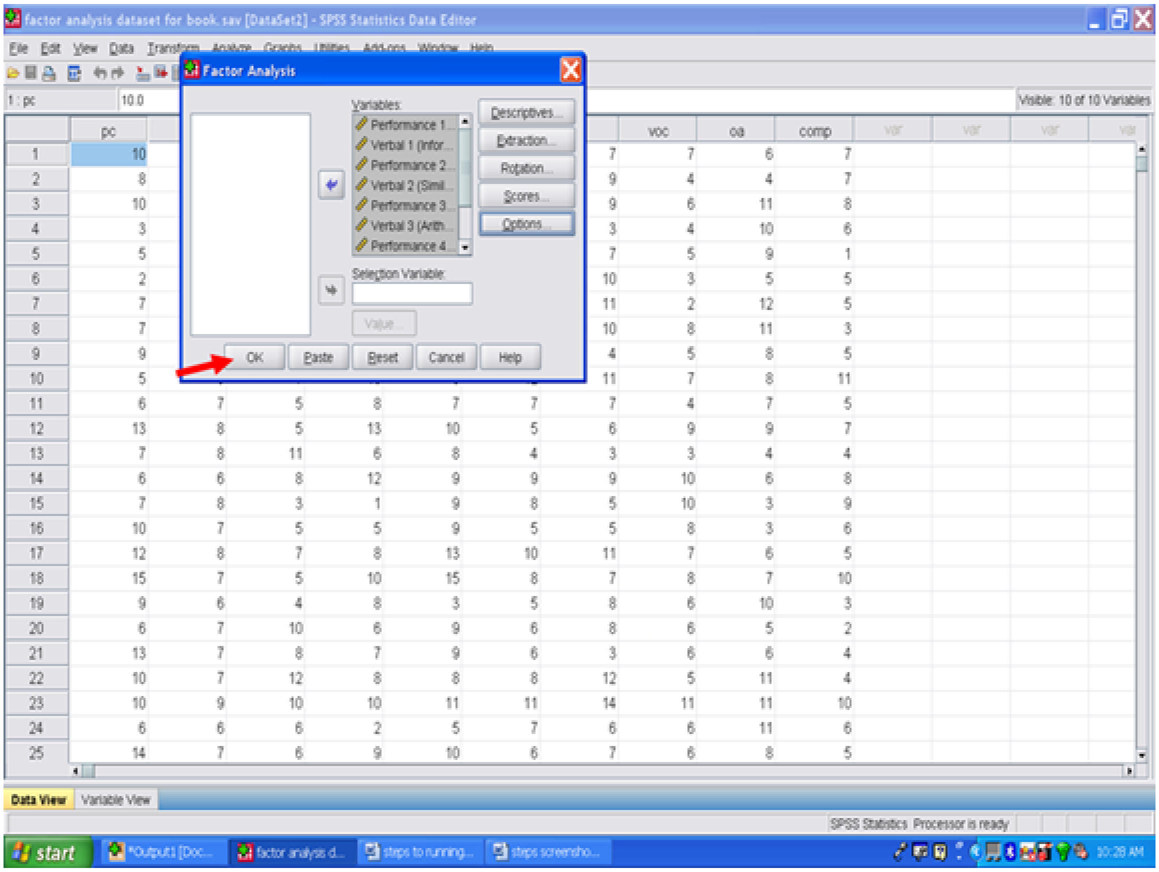
Display
☐ Unrotated factor solution
☑ Scree plot

Extract
● Based on Eigenvalue
Eigenvalues greater than:
○ Fixed number of factors
Factors to extract

Maximum Iterations for Convergence: 25

After clicking on Continue, the screen below should be present.

Now click on OK.

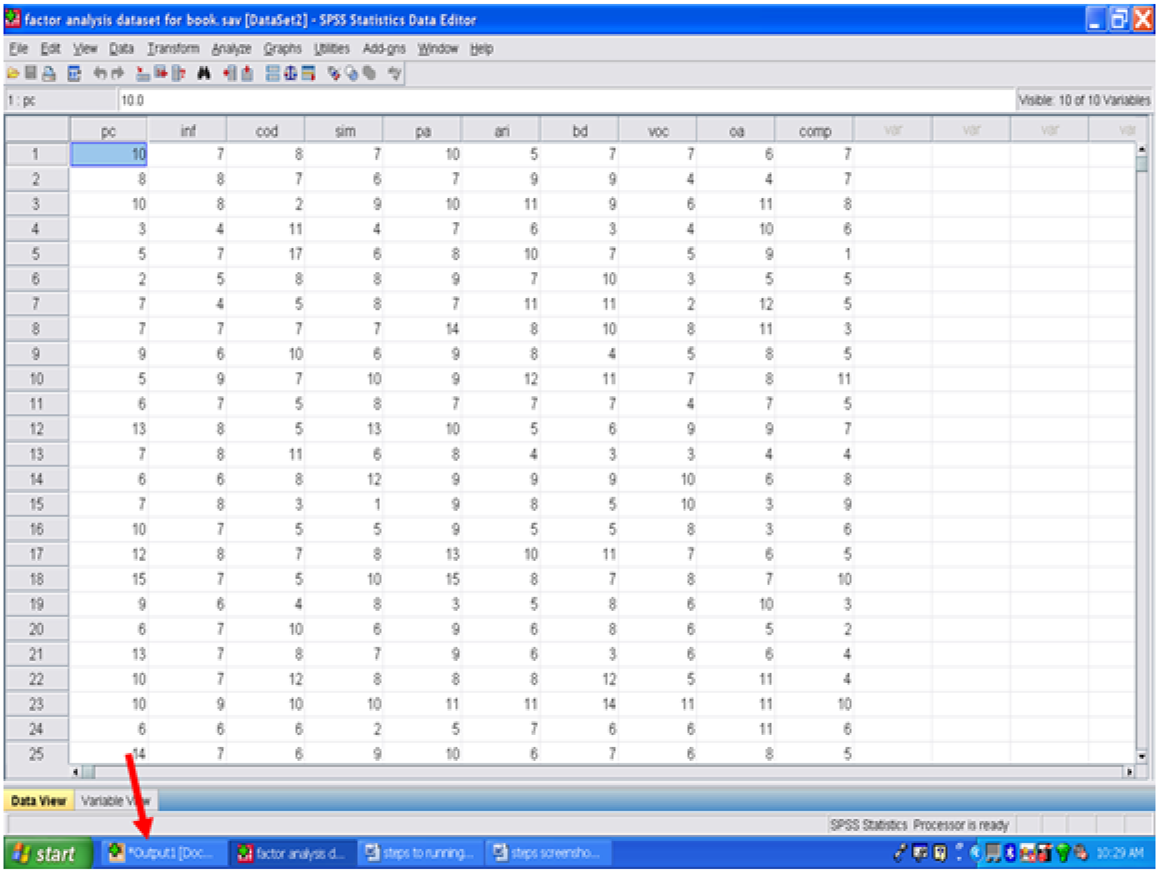


1 : pc 10.0

Visible: 10 of 10 Variables

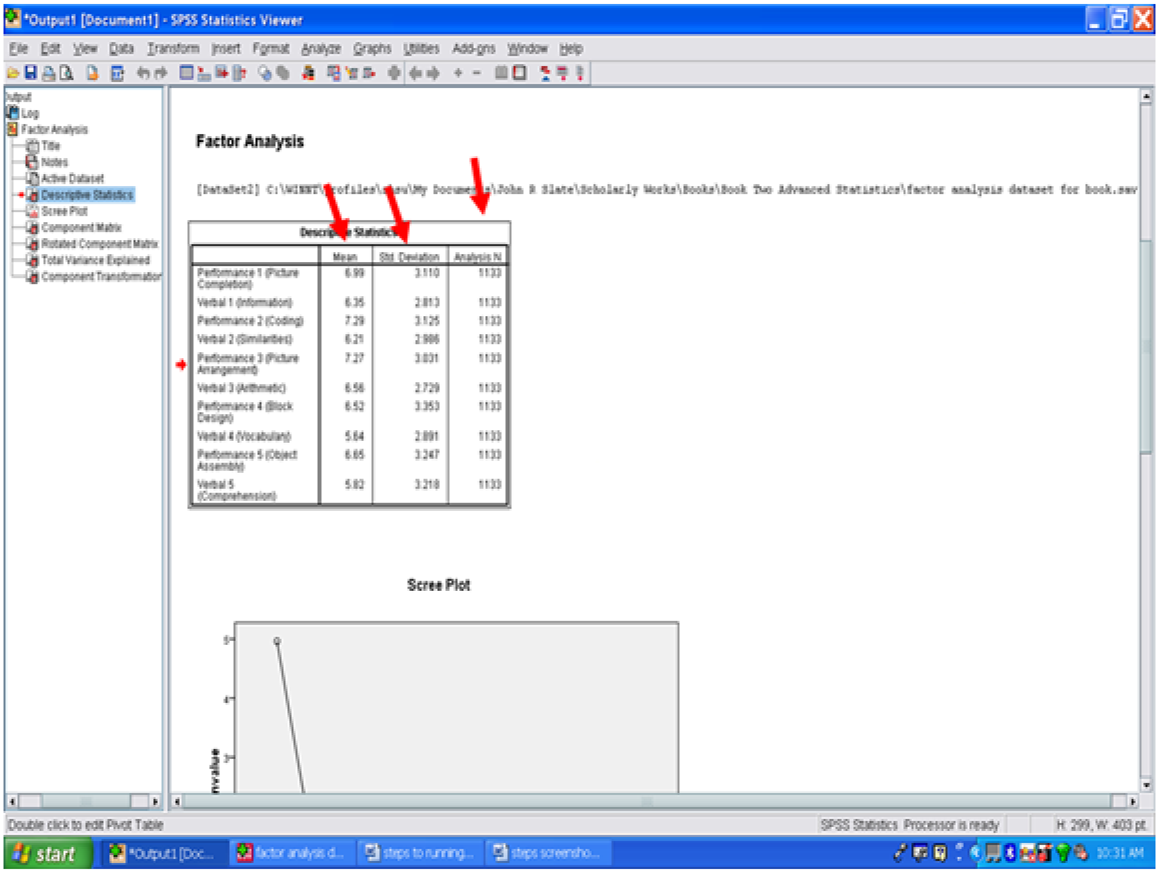
	pc							voc	oa	comp
1	10						7	7	6	7
2	8						9	4	4	7
3	10						9	6	11	8
4	3						3	4	10	6
5	5						7	5	9	1
6	2						10	3	5	5
7	7						11	2	12	5
8	7						10	8	11	3
9	9						4	5	8	5
10	5						11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

You should now have factor analysis results. If SPSS does not send you to your output screen, click on the Output icon at the bottom of your screen.



	pc	inf	cod	sim	pa	ari	bd	voc	oa	comp
1	10	7	8	7	10	5	7	7	6	7
2	8	8	7	6	7	9	9	4	4	7
3	10	8	2	9	10	11	9	6	11	8
4	3	4	11	4	7	6	3	4	10	6
5	5	7	17	6	8	10	7	5	9	1
6	2	5	8	8	9	7	10	3	5	5
7	7	4	5	8	7	11	11	2	12	5
8	7	7	7	7	14	8	10	8	11	3
9	9	6	10	6	9	8	4	5	8	5
10	5	9	7	10	9	12	11	7	8	11
11	6	7	5	8	7	7	7	4	7	5
12	13	8	5	13	10	5	6	9	9	7
13	7	8	11	6	8	4	3	3	4	4
14	6	6	8	12	9	9	9	10	6	8
15	7	8	3	1	9	8	5	10	3	9
16	10	7	5	5	9	5	5	8	3	6
17	12	8	7	8	13	10	11	7	6	5
18	15	7	5	10	15	8	7	8	7	10
19	9	6	4	8	3	5	8	6	10	3
20	6	7	10	6	9	6	8	6	5	2
21	13	7	8	7	9	6	3	6	6	4
22	10	7	12	8	8	8	12	5	11	4
23	10	9	10	10	11	11	14	11	11	10
24	6	6	6	2	5	7	6	6	11	6
25	14	7	6	9	10	6	7	6	8	5

In your SPSS Output screen, the first table of importance is the Descriptive Statistics table. The sample size (*n*), *M*, and *SD* for each of the 10 subscales used in the factor analysis are present in this table.



Factor Analysis

[DataSet2] C:\WINNT\[illegible]rofiles\[illegible]\My Docume[illegible]s\John R Slate\Scholarly Works\Books\Book Two Advanced Statistics\factor analysis dataset for book.sav

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Performance 1 (Picture Completion)	6.99	3.110	1133
Verbal 1 (Information)	6.35	2.813	1133
Performance 2 (Coding)	7.29	3.125	1133
Verbal 2 (Similarities)	6.21	2.986	1133
Performance 3 (Picture Arrangement)	7.27	3.031	1133
Verbal 3 (Arithmetic)	6.56	2.729	1133
Performance 4 (Block Design)	6.52	3.353	1133
Verbal 4 (Vocabulary)	5.64	2.891	1133
Performance 5 (Object Assembly)	6.65	3.247	1133
Verbal 5 (Comprehension)	5.82	3.218	1133

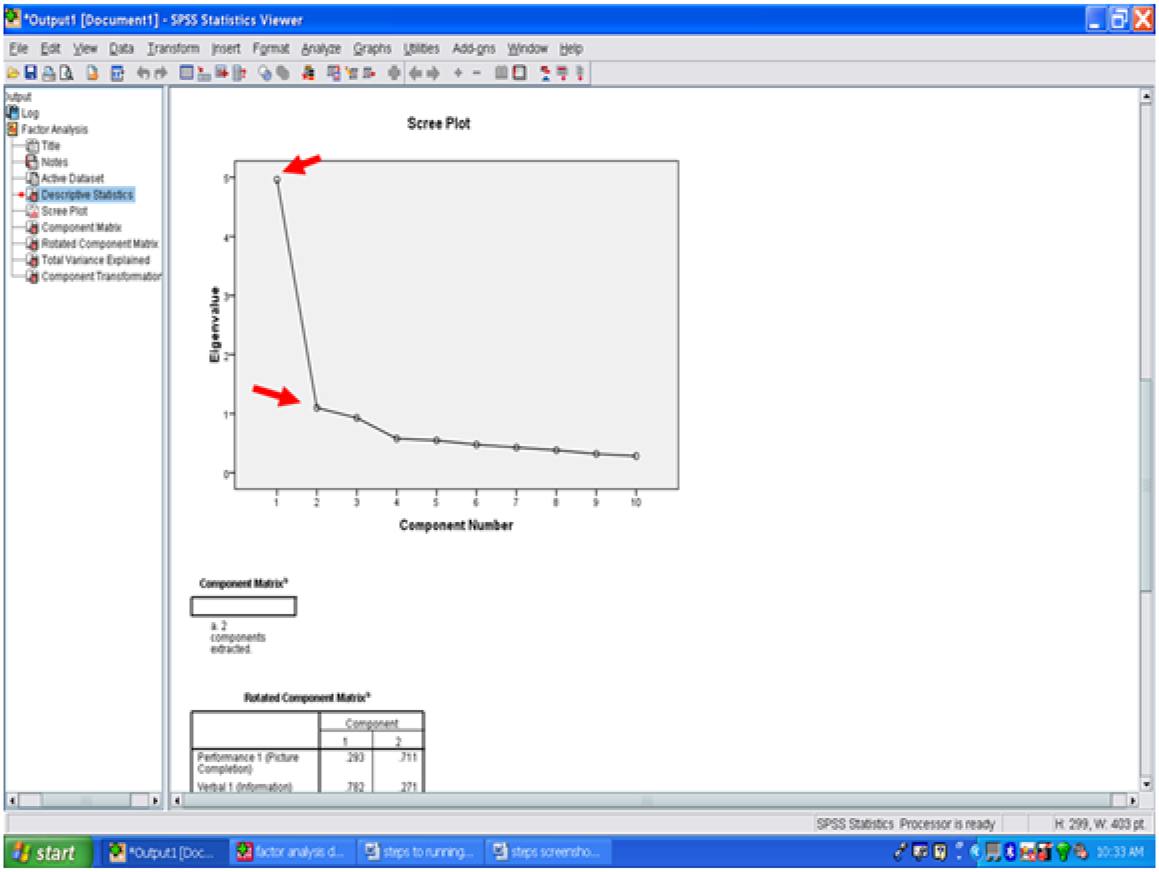
Scree Plot

Double click to edit Pivot Table

SPSS Statistics Processor is ready

H: 299, W: 403 pt

Underneath the Descriptive Statistics table is the Scree plot. What the scree plot does is to plot the eigenvalue against the factor number (Cattell, 1966; Zwick & Velicer, 1986). The eigenvalue and factor number are present in the table labeled Total Variance Explained. You will note in the Scree Plot below that the line is essentially flat after the second factor. This plot below depicts the presence of two possible factors, 1 and 2.



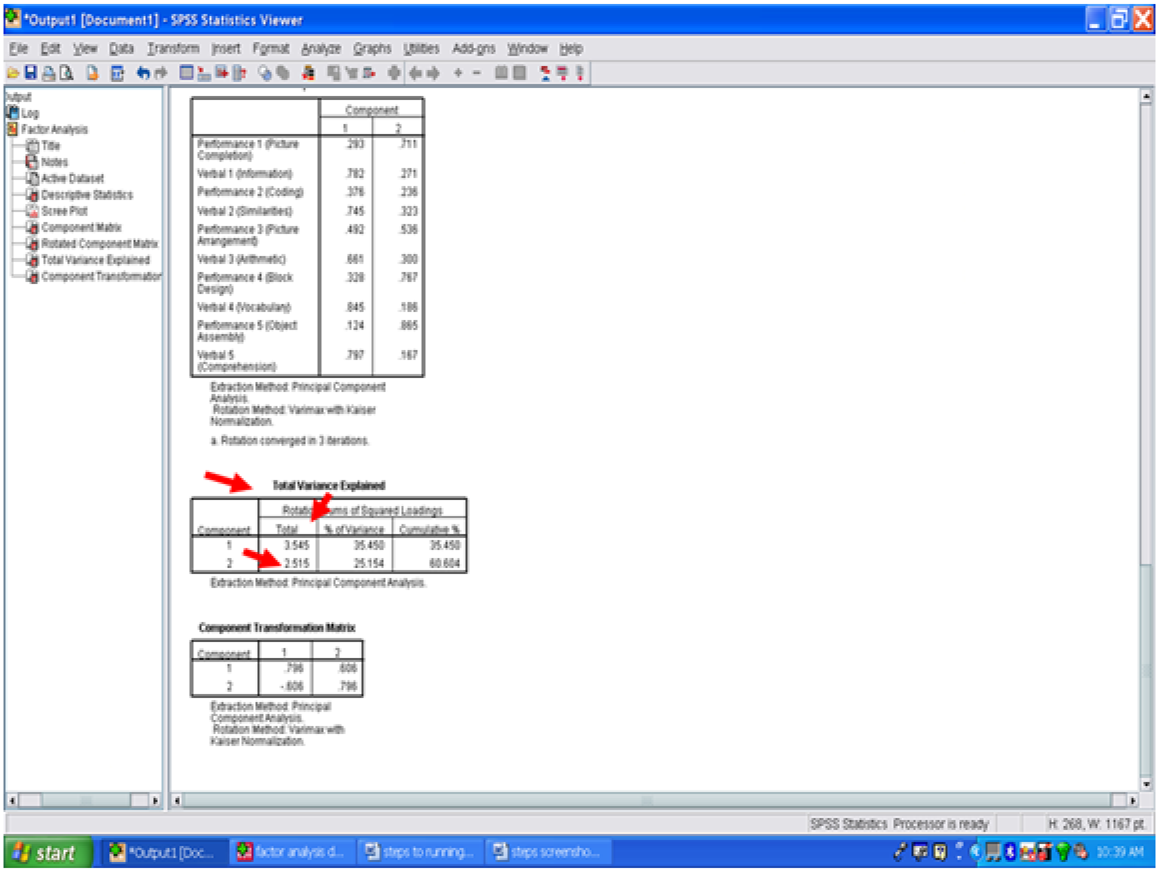
Component Matrix[a]

a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271

In the Total Variance Explained table, statistical information that is depicted in the Scree Plot is presented. The column labeled Total reflects the eigenvalues for the two factors. To determine the number of factors you may have: look at the eigenvalue column. All factors with values less than 1 are considered to be statistically insignificant and are disregarded (Kaiser, 1958). Thus, an eigenvalue of at least 1.0 must be present for a factor to be possible. In the Total Variance Explained table below, two factors are present with eigenvalues greater than 1.00: Factor 1 has an eigenvalue of 3.545 and Factor 3 has an eigenvalue of 2.515.



	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271
Performance 2 (Coding)	.376	.236
Verbal 2 (Similarities)	.745	.323
Performance 3 (Picture Arrangement)	.492	.536
Verbal 3 (Arithmetic)	.661	.300
Performance 4 (Block Design)	.328	.767
Verbal 4 (Vocabulary)	.845	.186
Performance 5 (Object Assembly)	.124	.865
Verbal 5 (Comprehension)	.797	.167

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
1	3.545	35.450	35.450
2	2.515	25.154	60.604

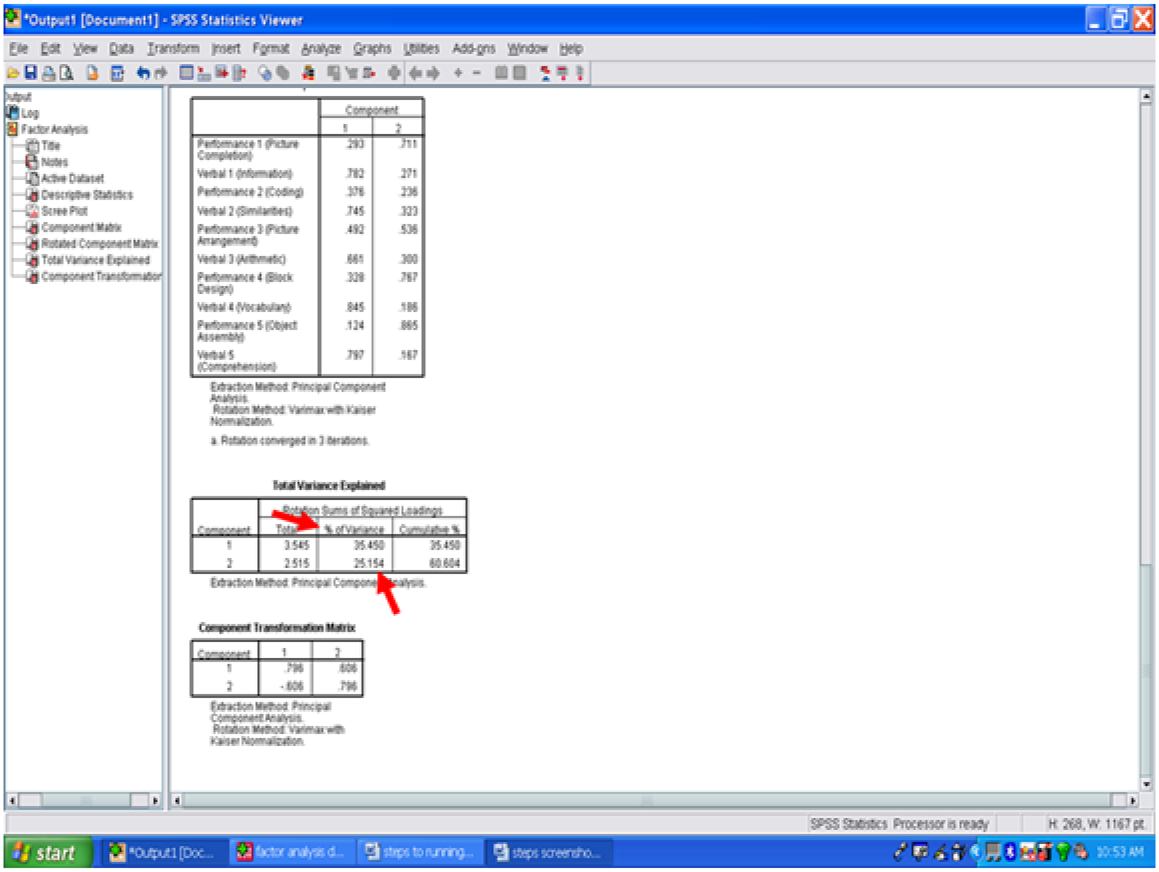
Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.796	.606
2	-.606	.796

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

After checking the eigenvalues to ensure that they are greater than one (Kaiser, 1958), the percent of variance must be examined. To constitute a viable factor, the factor should account for at least 5 percent of the variance to be used. In the example below, Factor 1 accounts for 35.45% of the variance and Factor 2 explains 25.15% of the variance. In both cases, the factors account for much more than the minimum 5%. Together these two factors account for 60.60% of the variance.



	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271
Performance 2 (Coding)	.376	.236
Verbal 2 (Similarities)	.745	.323
Performance 3 (Picture Arrangement)	.492	.536
Verbal 3 (Arithmetic)	.661	.300
Performance 4 (Block Design)	.328	.767
Verbal 4 (Vocabulary)	.845	.186
Performance 5 (Object Assembly)	.124	.865
Verbal 5 (Comprehension)	.797	.167

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.545	35.450	35.450
2	2.515	25.154	60.604

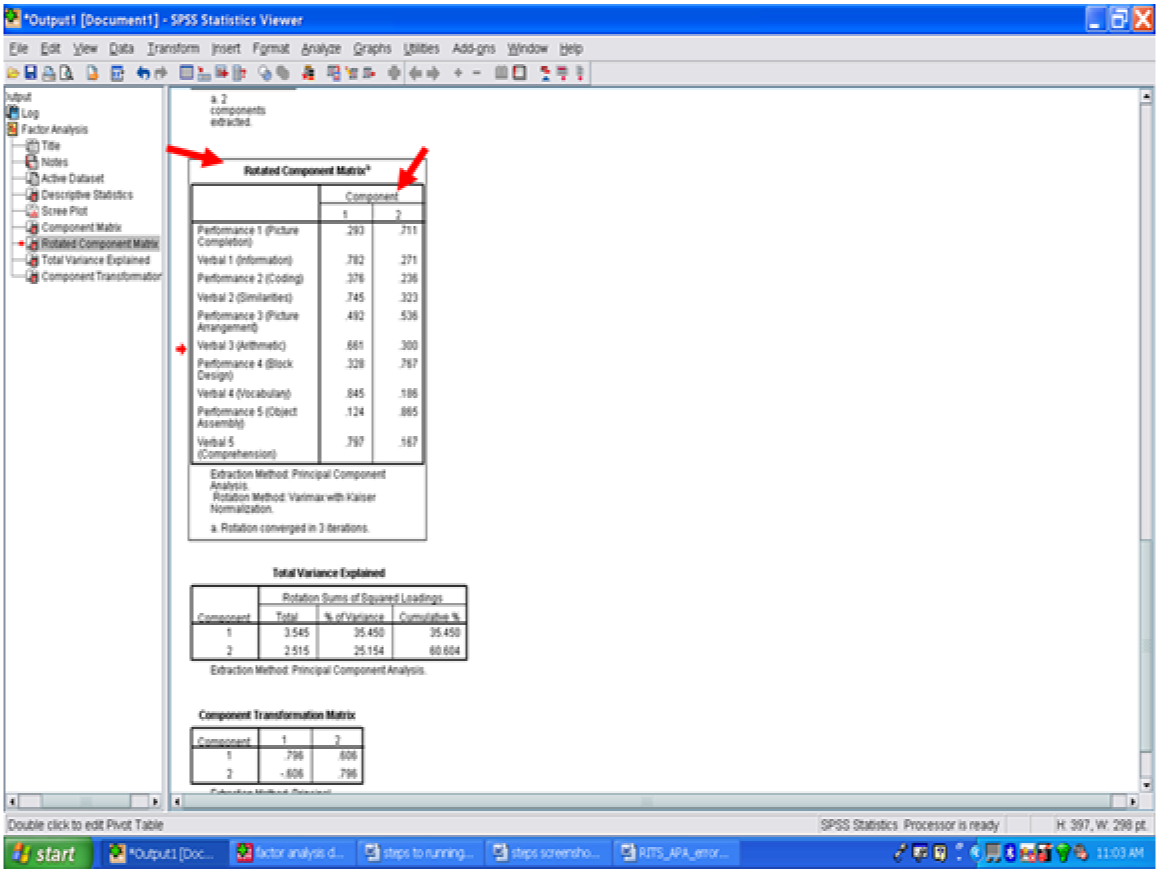
Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.796	.606
2	-.606	.796

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Next we will examine the Rotated Component Matrix. This table contains the factor loadings or pattern/structure coefficients for the 10 subscales analyzed in this Varimax procedure. To determine whether a subscale is a component of a specific factor, a cutoff value of .3 (Lambert & Durand, 1975) is recommended as an acceptable minimum value for pattern/structure coefficients. In this example, Verbal 1 (Information) has a pattern/structure coefficient of .782; Verbal 1 (Similarities) of .745; Verbal 3 (Arithmetic) of .661; Verbal 4 (Vocabulary) of .845; and Verbal 5 (Comprehension) of .797. Though above the cutoff of .3, Performance 2 (Coding), Performance 3 (Picture Arrangement), and Performance 4 (Block Design) are well below the coefficients for the Verbal subscales.



a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271
Performance 2 (Coding)	.376	.236
Verbal 2 (Similarities)	.745	.323
Performance 3 (Picture Arrangement)	.492	.536
Verbal 3 (Arithmetic)	.661	.300
Performance 4 (Block Design)	.328	.767
Verbal 4 (Vocabulary)	.845	.186
Performance 5 (Object Assembly)	.124	.865
Verbal 5 (Comprehension)	.797	.167

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
1	3.545	35.450	35.450
2	2.515	25.154	60.604

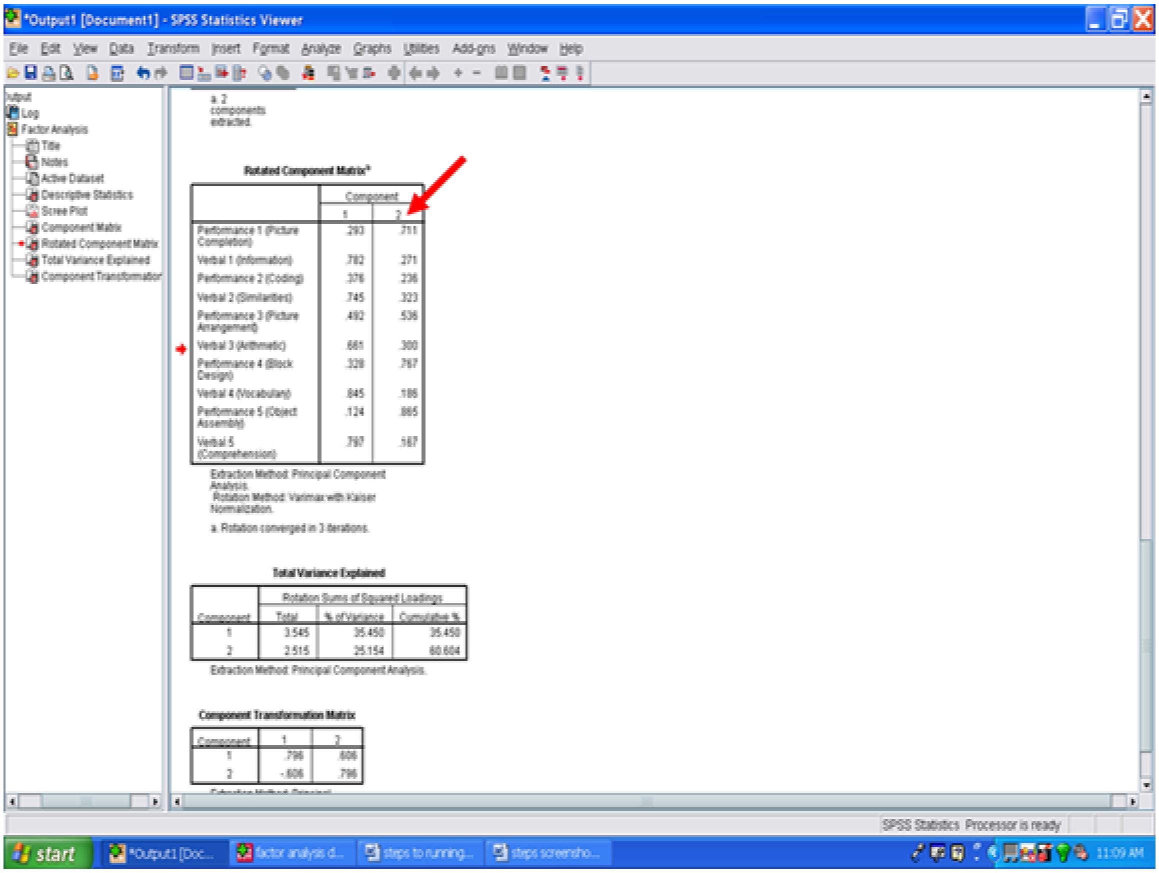
Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.796	.606
2	-.606	.796

Extraction Method: Principal

For Factor 2, the pattern/structure coefficients were .711 for Performance 1 (Picture Completion); .536 for Performance 3 (Picture Arrangement); .767 for Performance 4 (Block Design); and .865 for Performance 5 (Object Assembly). Two of the Verbal subscales were at or above the cutoff value of .3, however, their pattern/structure coefficients were markedly lower than the ones for the four Performance subscales mentioned above.



a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271
Performance 2 (Coding)	.376	.236
Verbal 2 (Similarities)	.745	.323
Performance 3 (Picture Arrangement)	.492	.536
Verbal 3 (Arithmetic)	.661	.300
Performance 4 (Block Design)	.328	.767
Verbal 4 (Vocabulary)	.845	.186
Performance 5 (Object Assembly)	.124	.865
Verbal 5 (Comprehension)	.797	.167

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
1	3.545	35.450	35.450
2	2.515	25.154	60.604

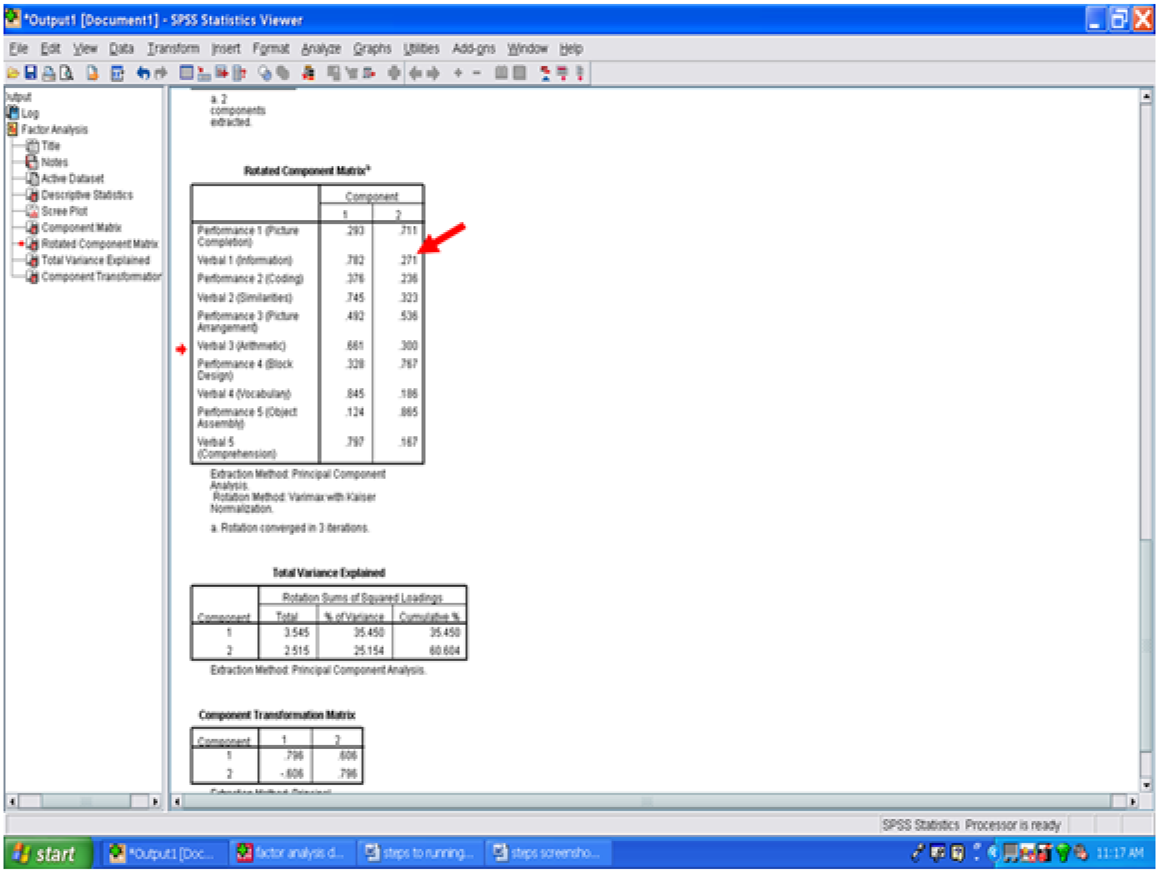
Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.796	.606
2	-.606	.796

Extraction Method: Principal

In this example, it appears that the Performance 2 (Coding) subscale is not part of Factor 2. It may be a component of Factor 1.



a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Performance 1 (Picture Completion)	.293	.711
Verbal 1 (Information)	.782	.271
Performance 2 (Coding)	.376	.236
Verbal 2 (Similarities)	.745	.323
Performance 3 (Picture Arrangement)	.492	.536
Verbal 3 (Arithmetic)	.681	.300
Performance 4 (Block Design)	.328	.767
Verbal 4 (Vocabulary)	.845	.186
Performance 5 (Object Assembly)	.124	.865
Verbal 5 (Comprehension)	.797	.167

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
1	3.545	35.450	35.450
2	2.515	25.154	60.604

Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.796	.606
2	-.606	.796

You have now conducted a Varimax factor rotation of the 10 subscales of the Wechsler Intelligence Scale for Children-Third Edition. To determine whether your factors are internally consistent, you would need to perform an internal consistency analysis for the subscales that constitute Factor 1 and a separate internal consistency analysis for the subscales that constitute Factor 2. See our chapter on steps and screenshots for conducting internal consistency analyses.

References

- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*, 245–276.
- Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, *23*, 187–200.
- Lambert, Z. V., & Durand, R. M. (1975). Some precautions in using canonical analysis. *Journal of Market Research*, *12*, 468–475.

- Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99*, 432–442.